

Studies of Intrapersonal Conflict and its Implications

A dissertation presented

by

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to

The Information, Technology and Management Program
Harvard University and Harvard Business School

in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy
in the subject of
Information, Technology and Management
Harvard University
Cambridge, Massachusetts

May 2009

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Abstract

The three papers included in this dissertation all examine intrapersonal conflict, or the conflict people experience when deciding between doing what they *want* (e.g., watching lowbrow films, spending as if they were wealthier, and eating unhealthy but tasty foods) and what they *should* (e.g., watching highbrow films, spending more responsibly, and eating healthy foods). The first paper relies on archival data from an online DVD rental company to demonstrate that people procrastinate more about watching *should* films than *want* films in the field and that experience reduces this effect. The second paper relies on archival data from an online grocery company to demonstrate that customers buy more expensive baskets of groceries (a *want* behavior) when they receive an unexpected \$10 windfall, and customers also buy more items they would not typically purchase following the receipt of a windfall. The third paper relies on a series of laboratory studies to demonstrate that uncertainty about the future increases an individual's preference for *wants* over *shoulds* and that this effect is strongest when uncertainty pertains to similar outcomes.

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ACKNOWLEDGEMENTS

Many people have contributed in innumerable ways to the research presented in this dissertation and to my development in graduate school. First, thank you Max for your seemingly endless supply of support, guidance, insights, and friendship, and for always thinking of your students first. I will strive, unsuccessfully, to be half the mentor and advisor to others that you have been to me. Kathleen, thank you for being a role model to me - our research together helped prove just how valuable it is for someone early in her career to have such a mentor. David P., thank you for helping me through every step of the ITM program and for always being supportive of my somewhat unorthodox path. David L., thank you for being a constant source of terrific ideas, which have improved this dissertation immensely, and for your enthusiasm. John, thank you for being such an extraordinary teacher, friend and collaborator. I still don't quite remember how it all began, but I am so glad it did! And Todd, thank you for teaching me most of what I know about psychology and for being such a pleasure to work with.

There are many others who have contributed to my life and research at Harvard who I would also like to thank. These people include Modupe Akinola, Lisa Shu, Chia Tsay, Mary Carol Mazza, Karim Kassam, David Brunner, Brad Staats, Emilie Feldman, Dolly Chugh, Eugene Caruso, Heather Caruso, Daylian Cain, Mihai Manea, James Burns, Greg Barron, Frances Frei, Malcolm Baker, and Luke Coffman. I also appreciate the tremendous support I have received over the years from administrators and staff at Harvard. Thank you Toni Wegner, Sarah Woolverton, John Sheridan and other members of the CLER team, Janice McCormick, LuAnn Langan, Dianne Le, Deb Hoss, and

Ranjan Ahuja. And thanks also to the many research assistants I have been fortunate to work with including Zach Sharek, Elizabeth Weiss, Jennifer Arias, Bianca Caban, Vanessa Schneider, Jessica Matthews, Michael Buckley, Heidi Lu, and Henning Krohnstad. I also thank Harvard Business School, Harvard University, and Wyss for funding support.

And finally, thank you to Cullen, my parents, my extended family and my friends for providing me with such incredible support (emotional and otherwise) throughout my doctoral studies.

INTRODUCTION

This dissertation is composed of three related papers. All of the papers included in this dissertation present studies of the causes and consequences of intrapersonal conflict, or the conflict people experience when choosing between doing what they *want* (e.g., watching lowbrow films, spending as if they were wealthier, and eating unhealthy but tasty foods) and what they *should* (e.g., watching highbrow films, spending more responsibly, and eating healthy foods). Two of the papers rely on archival data sets from e-commerce companies to test theories about present bias and mental accounting in field settings, and the third paper reports on a laboratory study examining the effects of uncertainty on intrapersonal conflict.

The first paper reports on a field study demonstrating systematic differences between the preferences people anticipate they will have over a series of options in the future and their subsequent revealed preferences over those options. Using a novel panel data set, we analyze the film rental and return patterns of a sample of online DVD rental customers over a period of four months. We predict and find that *should* DVDs (e.g., documentaries) are held significantly longer than *want* DVDs (e.g., action films) within-customer. Similarly, we also predict and find that people are more likely to rent DVDs in one order and return them in the reverse order when *should* DVDs are rented before *want* DVDs. Specifically, a 1.3% increase in the probability of a reversal in preferences (from a baseline rate of 12%) ensues if the first of two sequentially rented movies has more *should* and fewer *want* characteristics than the second film. Finally, we find that as the same customers gain more experience with online DVD rentals, the extent to which they

hold *should* films longer than *want* films decreases. Our results suggest that present bias has a meaningful impact on choice in the field and that people may learn about their present bias with experience, and, as a result, gain the capacity to curb its influence.

The second paper examines the effect of small windfalls on consumer spending decisions by comparing the purchases online grocery customers make when redeeming \$10-off coupons with the purchases they make without coupons. Controlling for customer fixed effects and other variables, we find that grocery spending increases by \$1.59 when a \$10-off coupon is redeemed. The extra spending associated with coupon redemption is focused on groceries that a customer does not typically buy. These results are consistent with the theory of mental accounting but are not consistent with the standard permanent income or lifecycle theory of consumption. While the hypotheses we test are motivated by mental accounting, we also discuss some alternative psychological explanations for our findings.

The third paper examines the effect of uncertainty about the future on whether individuals select *want* or *should* options for consumption. As predicted by the dual systems theory of *want/should* conflict, uncertainty about what the future may bring increases individuals' tendency to favor *want* options over *should* options, and these results hold even when individuals are able to make choices contingent upon the outcomes of uncertain events. These results are strongest in situations where uncertainty pertains to similar outcomes, suggesting that the effects of uncertainty are enhanced when a decision maker finds it more difficult to distinguish between the possible contingencies

she faces. Overall, this work suggests that reducing uncertainty in a decision maker's environment can have a "halo effect", leading to less impulsive choices.

These three papers make a number of contributions to the existing behavioral decision making literature. In addition to verifying that the findings of laboratory studies about *want/should* conflict and present bias as well as mental accounting extend to the field, the first two papers in this dissertation investigate questions about present bias and mental accounting that would be difficult to study in a laboratory setting. They examine whether people seem to learn from experience about their present bias and how the items people purchase when they receive unexpected small windfalls compare with their typical purchases. The third paper examines a potential means of increasing the rate at which people make choices that are in their long-term best interest (or *should* choices).

Learning more about the various conditions that alter people's preferences for *want* options versus *should* options is particularly important because of the implications of this research for addressing such important challenges as the obesity epidemic, under-saving for retirement and sub-optimal educational attainment, among others.

PAPER 1:

Highbrow Films Gather Dust:

A Study of Dynamic Inconsistency and Online DVD Rentals

(with Todd Rogers, Analyst Institute and Max H. Bazerman, Harvard Business School)

In press, Management Science

AUTHOR'S NOTE: We gratefully acknowledge helpful and insightful input from two anonymous referees, J. Beshears, G. Loewenstein, D. Laibson, S. Mullainathan, N. Ashraf, D. Parkes, K. McGinn, S. Woolverton, W. Simpson, S. Hanson, A. Sunderam, D. Moore, D. Chugh, members of Max's Non-Lab, and seminar participants at Harvard, Yale, Stanford, Cornell, the University of Chicago, London Business School, Northwestern, Columbia, the University of California at Berkeley, the Wharton School, the University of Southern California, the University of California at San Diego, the Ohio State University, and the 2008 Society for Judgment and Decision Making Conference. In addition, we are thankful to Z. Sharek who helped us design and implement our survey to measure a film's should minus want score, to M. Norton and L. Anik who helped us run our survey to ask people why they hold should films longer than want films, and to M. McCoy, J. Packi, E. Siegle, E. Weinstein and K. Chance who helped us by giving films want and should ratings. We also appreciate the cooperation of our contacts at Quickflix (www.quickflix.com.au) and the help of A. Elberse in facilitating our relationship with Quickflix.

1. Introduction

Throughout our lives, we face many choices between things we know we *should* do and things we *want* to do: whether or not to visit the gym, whether or not to smoke, whether to order a greasy pizza or a healthy salad for lunch, and whether to watch an action-packed blockbuster or a history documentary on Saturday night. In this paper, we investigate the effects of this type of internal conflict between the desire to do what will provide more short-term utility and the knowledge that it is in our long-term interest to do something else. In particular, we focus on the way this type of conflict leads individuals to make systematically different decisions in the domain of film rentals when they make choices in the present about what to watch versus choices for the future about what to rent.

A number of authors have discussed the distinction between goods that provide primarily long-term benefits, which we call *should* goods, and goods that provide primarily short-term value, which we call *want* goods. Options conceptually similar to *shoulds* have also been called “cognitive,” “utilitarian,” “virtue,” “affect-poor,” and “necessity” options, while options that are conceptually similar to *wants* have also been called “affective,” “hedonic,” “vice,” “affect-rich,” and “luxury” options (see Khan, Dhar and Wertenbroch, 2005 for a review). We rely on the terms *should* and *want* to convey the internal tension produced by these competing options. The distinction between these different types of goods is important because evidence suggests that the context in which a decision is made may affect which types of goods, *should* goods or *want* goods, a person prefers.

The tendency to put off options preferred by our *should* selves (e.g., saving, eating vegetables) in favor of options preferred by our *want* selves (e.g., spending, eating ice cream) is stronger for decisions that will take effect immediately than decisions that will take effect in the future (Loewenstein, 1996; Bazerman, Tenbrunsel, and Wade-Benzoni, 1998). Economists have modeled this phenomenon by proposing that people dramatically discount future utility relative to present utility (see for example Phelps and Pollak, 1968; Ainslie, 1992; Loewenstein and Prelec, 1992; Laibson, 1996; O’Donoghue and Rabin, 1999) and with “multiple-selves” models in which individuals’ decisions are controlled by multiple internal agents with competing preferences, one of which optimizes over a longer time horizon than the other and is more likely to control choices that are made for the future than the present (see for example Thaler and Shefrin, 1981; Read, 2001; Fudenberg and Levine, 2006). In this paper, we empirically test for the time-inconsistent preferences that these models of present bias predict people will demonstrate when making repeated choices over the same set of goods, ranging from extreme *want* goods (items with only short-term benefits) to extreme *should* goods (items with only long-term benefits) when some decisions will take effect in the present and some will take effect in the future.

Evidence that people prefer *want* options over *should* options more frequently when making choices about the short-run rather than the long-run has been found in numerous domains (Oster and Scott Morton, 2005; Wertenbroch, 1998; Rogers and Bazerman, 2008; Read and Van Leeuwen, 1998; Milkman, Rogers, and Bazerman, 2007), including that of film rentals in a laboratory setting (Read, Loewenstein and

Kalyanaraman, 1999; Khan, 2007). To extend the study of the impact of present bias on people's preference rankings of *want* and *should* options beyond the laboratory, we obtained a novel panel data set containing individual-level information about consumption decisions over a period of four months from Quickflix, an Australian online DVD rental company. This data set comes from a domain in which individuals make rental choices for the future and consumption choices for the present from a set of goods that range from extreme *should* items (highbrow films) to extreme *want* items (lowbrow films). Repeated observations of the same individuals over time allow us to investigate both whether customers exhibit present bias and whether they learn to reduce their present bias with experience.

To test the theory that people exhibit present bias in the domain of film rentals, we begin by scoring the films in our data set on the spectrum from *should* to *want* items. We then use our rental data to test and confirm the hypothesis that the same Quickflix customer holds films longer the closer the films fall to the *should* end of the *want/should* spectrum. We also test and confirm the hypothesis that when customers rent two sequential films, the first of which has more *should* and fewer *want* characteristics than the second film, they are more likely to reverse their preferences (watching and returning the films out of order) than when they rent a movie with more *want* and fewer *should* characteristics first. Both of these hypotheses stem from the combination of a model of consumers as present biased and our definition of relative *should* and *want* goods. We thus interpret our findings as evidence that people exhibit present bias in the field when making decisions about film rentals. Finally, we address and attempt to rule out a

number of alternative explanations for our findings. One set of analyses designed to rule out alternative explanations for our results reveals that consumers reduce the extent to which they hold films that fall closer to the *should* end of the *want/should* spectrum longer than other DVDs as they gain rental experience. This suggests that people learn about their present bias over time and that the effects we detect are unlikely the result of “optimal” decision making strategies.

The rest of this paper is organized as follows. Section 2 reviews the relevant literature on time-inconsistent preferences and clarifies the origins of our hypotheses. In Section 3, we describe our data set and methods for rating films along the spectrum from *should* to *want*. We present the results of our analyses and discuss alternative explanations for our findings in Section 4 and present our conclusions in Section 5.

2. Past Research on Time-inconsistent Preferences

A considerable literature on time-inconsistent preferences has developed since Strotz (1956) pointed out that people exhibit more impatience when making decisions that will take effect in the short-run rather than the long-run. Loewenstein and Thaler (1989), Ainslie (1992), O’Donoghue and Rabin (1999), and Frederick et al. (2001) provide partial reviews of the literature on intertemporal choice, and Milkman, Rogers and Bazerman (2008) review the literature on the context effects that have been shown to alter people’s preferences for *should* versus *want* options.

Evidence from numerous laboratory studies indicates that consumers exhibit present bias when making choices about money (McClure, Laibson, Loewenstein and Cohen, 2004; Thaler, 1981; Kirby and Herrnstein, 1995; Kirby and Marakovic, 1996;

Kirby, 1997), lottery tickets (Read et al., 1999), relief from pain and irritation (Solnick, Kannenberg, Eckerman, and Waller 1980; Navarick, 1982; Trope and Fishbach, 2000), films (Read et al., 1999; Khan, 2007), and foods (Wertenbroch, 1998; Khan, 2007; Read and Van Leeuwen, 1998), among other things. Models of present bias have also been tested and confirmed in the field in the domains of gym attendance (Malmendier and Della Vigna, 2006), magazine newsstand and subscription pricing (Oster and Scott Morton, 2005; Wertenbroch, 1998), savings behavior (Angeletos, Laibson, Repetto, Tobacman, and Weinberg 2001; Ashraf, Karlan and Yin, 2006), and supermarket quantity discounts (Wertenbroch, 1998). Past field studies, however, have not directly tested whether people's preference rankings over a set of goods are systematically different in advance of consumption than at the time of consumption, as predicted by a combination of a model in which consumers dramatically discount utility from future periods and our definition of *want* and *should* options.

For a number of reasons, it is empirically difficult to test models of consumers as present biased outside the laboratory. A direct test of any such model requires a data set containing information about the consumption decisions of the same consumers over time, where different decisions take effect at different points in the future. Past field studies have overcome the hurdle of obtaining individual-level consumption data over time in the domains of savings behavior and gym attendance. Partnering with a bank in the Philippines, Ashraf et al. (2006) offered commitment savings products to a subset of the bank's former clients. They confirm (for female subjects) the prediction that consumers who exhibit more present bias on hypothetical questions are more likely to

take up commitment devices. Ashraf et al. (2006) track individuals' take up of a savings commitment device as well as the amount individuals save in their bank accounts over a 12-month period. Malmandier and Della Vigna (2006) employ a panel data set to examine individual-level gym attendance and contract types over a three-year period at several health clubs. They find that present bias explains the popularity of flat-fee contracts among gym customers who could have saved money by paying per-visit. While neither of these studies employs data that would permit the identification of explicit reversals in preferences at the within-subject level, both test predictions of models of present bias in the field at the within-subject level. Both studies also examine the choice of whether or not to engage in a *should* behavior, but not the way in which people dynamically change their preferences over a set of options ranging from those with more *want* characteristics to those with more *should* characteristics, which is the phenomenon examined in this paper.

Tests of the hypothesis that individuals are present biased using between-subject data are less challenging to perform in the field than tests employing within-subject data. Angeletos et al. (2001) use data from the Panel Study of Income Dynamics to evaluate the relative performance of the competing hyperbolic and exponential time-discount function models. As compared to the exponential discount function, which does not allow for present bias, they find that the hyperbolic discount function, which models consumers as present biased, offers a better approximation of the data on household liquid wealth, credit card borrowing, and changes in consumption in response to predictable changes in income. In another between-subject field study of present bias,

Oster and Scott Morton (2005) examine the newsstand and subscription pricing of *should* and *want* magazines (which they call “meritorious magazines” and “magazines for which consumers might have a time-inconsistency problem,” respectively). The authors find, as models of present bias predict, that *should* magazines have a higher subscription-to-newsstand price ratio than *want* magazines. Finally, Wertenbroch (1998) examines the quantity discounts applied to a matched sample of 30 virtue (*should*) and 30 vice (*want*) supermarket goods and finds that, consistent with models of present bias in which consumers are assumed to be sophisticated about their self-control problems, *want* goods are, on average, subject to steeper quantity discounts than *should* goods. He also estimates the price elasticity of demand for a sample of paired vice (*want*) and virtue (*should*) groceries using a year of supermarket scanner data. Again, consistent with models of present bias, Wertenbroch finds that demand for *should* goods is more price sensitive than demand for *want* goods. However, all of these studies are tests of the implications of models of present bias on outcomes that are one or more levels removed from individuals’ actual choices.

In our study, we attempt to combine the approaches of Wertenbroch (1998) and Oster and Scott Morton (2005), who examine the implications of models of present bias in field domains where consumers are faced with ranking their preferences over a range of goods, with the approaches of Ashraf (2006) and Malmandier and Della Vigna (2006), who use within-subject data sets to test various predictions of models of present bias in the field. The central hypotheses of this paper and the domain of interest were inspired by Read et al. (1999), who conduct a laboratory experiment to show that when choosing a

film for immediate consumption, people more often prefer movies with more *want* characteristics and fewer *should* characteristics than when selecting a film for delayed consumption. Others have hypothesized that online DVD rental customers might exhibit a tendency to hold highbrow films longer than lowbrow films (see Phillips, 2006; Tugend, 2006; and Goldstein and Goldstein, 2006), but none have presented empirical support for their conjectures. Our goal is to provide the first direct, within-subject field test of whether consumers exhibit present bias in a domain where their choice set includes options ranging from *want* to *should* items. In addition, we look for evidence that customers learn about their present bias as they gain experience.

Models of present bias suggest that given a set of options, an option that provides more long-term benefits (a *should* option) will be relatively more attractive than an option that provides more short-term benefits (a *want* option) when a choice is made for the future than when that same choice is made for the present. Since the decision of which film from a collection to watch first (and thus return first) is a choice made over a set of options for the present, theories of present bias lead to the following hypothesis:

H1a: *The closer a film falls to the should end of the want/should spectrum, the longer a customer will postpone watching and thus returning it.*

Similarly, since the decision of which film to rent is a choice made for the future, but the decision of which film to watch (and thus return first) is made for the present, theories of present bias lead to the following hypothesis:

H1b: *The probability that a customer will return two sequentially rented films out of order increases as the first film rented becomes more of a should on the want/should spectrum relative to the second film.*

Finally, in an attempt to rule out the possibility that individuals have a rational reason for holding more extreme *should* films longer than other films, we look for evidence that customers learn to reduce the extent to which they exhibit this tendency as they gain experience with online DVD rentals. If it were optimal for customers to hold more extreme *should* films longer than others, we would not expect experience to diminish this effect. Past research on commitment devices has shown that some people who exhibit present bias are sophisticated about their self-control problems and willing to incur costs to reduce the effects of their present bias (Wertenbroch, 1998; Ariely and Wertenbroch, 2002; Ashraf et al., 2006). These results raise the question of whether people gain sophistication about their present bias through experience or whether sophistication is a stable trait. It has been demonstrated in a number of domains that people have the ability to learn from experience to reduce their decision making errors (Lichtenstein & Fischhoff, 1980; Erev and Roth, 1998). As we address potential alternative “rational” explanations for our results, we look for evidence that as customers gain experience renting DVDs, they reduce the extent to which they procrastinate about watching films that fall closer to the *should* end of the *want/should* spectrum more than others.

3. Methods

A. Data Set

We obtained a novel panel data set from Quickflix, the second largest online DVD rental company in Australia, containing information about the individual choices made by the company's customers between March 1, 2006 and June 30, 2006. Customers in the most popular Quickflix subscription plan pay a flat fee each month to hold three exchangeable films in their homes, and they may hold the movies they rent for an unlimited length of time without incurring late fees. To ensure that all customers in our data set are subject to the same incentives with regard to their film rental and return behavior, we conduct our analyses only on customers in Quickflix's most popular plan. Quickflix offers a selection of over 15,000 movie titles, and each customer maintains a "queue," or an ordered list of the movies she would like to rent. When a customer returns one film, Quickflix immediately sends that customer the film listed at the top of her queue. When a customer's first choice is unavailable, the next highest film in her queue is sent instead. For a typical subscriber, the net turn-around time for a film exchange is two days, and postage is paid by Quickflix.

Our data set includes the day-to-day records of people's film rentals and returns over a four-month period. Although our rental data set ends on June 30, 2006, we have records of the dates when each of the films rented during the relevant time period was returned. Quickflix also provided us with unique identifiers for each customer and with descriptive information about each film in its database. During the four-month period included in our data set, a total of 4,474 different customers participated in Quickflix's most popular three-at-a-time unlimited DVD rental plan, renting a total of 101,545 DVDs

(an average of 22.7 per customer). On average, these customers held the DVDs they rented for 12 days, and 90% of movies were held between 4 and 32 days.

B. Assigning Films Continuous Should/Want Scores

To test our hypotheses about how films' positions on the *should/want* spectrum affect both (a) the order in which they are returned relative to the order in which they were rented and (b) how long it takes customers to return them, we must create a measure of the extent to which a film is a *should* versus a *want*. We first create separate scores for films on a *should* spectrum and a *want* spectrum and then subtract films' *want* scores from their *should* scores to measure where each film fits on the spectrum from an extreme *should* option to an extreme *want* option.¹

To generate a measure of each Quickflix film's *should minus want score*, we borrow data from a previous research project. For that project, 145 anonymous American volunteers who signed up to participate in online paid polls administered by Harvard Business School's Computer Lab for Experimental Research (CLER) were paid \$15 to give *should* and *want* scores to a random sample of 60 films from a database of 1,040 movies. Raters ranged in age from 18 to 45, with an average age of 25, and 70% of raters were female. After being provided with concept definitions, subjects in this study were first asked to give 60 films *want/(should)* ratings ranging from 1 to 7 and were then asked to give the same set of 60 films *should/(want)* ratings ranging from 1 to 7 (see Appendix

¹ Through pre-testing we determined that the extent to which a film is a *should* film (based on how much long-term value it provides) is most easily evaluated distinctly from the extent to which it is a *want* film (based on how much short-term value it provides). However, the variable of interest in this study is where on the spectrum from an extreme *should* to an extreme *want* a film lies, which theories of present bias suggest will predict the extent to which it is preferred when choices are made for the future versus the present.

for more details). The order in which subjects were asked to rate the 60 films was randomized, as was the sequence in which they provided *should* and *want* ratings (50% gave films *should* ratings first). Subjects saw the same information about a film that they would have seen if they had searched for it on the website of the American online DVD rental company Netflix. We provided subjects with an incentive to provide accurate ratings of films by paying them for performance. For each film a survey participant classified within one point of the average rating across respondents, her “accuracy score” was increased by one. The 20% of participants who received the highest accuracy scores received a \$10 bonus payment.

Five hundred of the 1,040 movies from this survey were also films in the Quickflix DVD rental database. Since the films subjects rated were randomly selected, these 500 films were rated by varying numbers of subjects. An average of 8.58 survey participants rated each film (standard deviation = 3.02).

To confirm that subjects provided us with reliable ratings of the movies in our survey database, we conduct an analysis of inter-rater reliability. Since we are interested in quantifying each film’s *should minus want score*, we first calculate this difference variable for each film-rater pair. If our survey ratings contain a meaningful signal, the *should minus want scores* assigned by different survey participants to the same film should be more tightly clustered than the *should minus want scores* assigned by different survey participants to different films. We run a one-way analysis of variance (ANOVA) to compare ratings variation between films to ratings variation within film (Shrout and Fleiss, 1979). An intraclass correlation of 0.21 and an estimated reliability of a film

should minus want score mean of 0.70 confirms that our survey averages are reliable: *should minus want scores* vary significantly more between films than within films. To check that participants understood from our definitions of *want* and *should* movies that, for the most part, extreme *should* movies are not extreme *want* movies and vice versa, we examine the correlation between a movie's average *want* score and its average *should* score. This correlation is highly significant and negative ($\rho = -0.22$; p-value < 0.001) across the 500 films in our sample, suggesting that our raters grasped the relationship between a typical movie's *want* and *should* characteristics.

To validate these scores and ensure that the incentives we provided to subjects for performance did not bias their ratings, we hired five research assistants to assign each of the 500 films in our sample *want* and *should* scores. These research assistants were provided with the same concept definitions as our original subjects and the same information about each film, and the order in which they rated films was randomized. Our research assistants were each paid a flat fee of \$120 for their time with no bonus pay for "accuracy." The Cronbach's alpha across these five raters' *should minus want scores* for the 500 films in our sample was 0.64, indicating a good level of agreement (Nunnally, 1967). The correlation between the average *should minus want scores* produced by our original 145 subjects and our five research assistants across the 500 films in our database was 0.68 (p-value < 0.001). This high correlation between the two sets of ratings gives us confidence that paying subjects for performance did not harm the reliability of the survey data we collected on films' *should minus want scores*. It is also worth noting that none of the primary regression results presented in this paper differ meaningfully in

magnitude or significance if we re-run our analyses using the ratings data obtained from research assistants instead of the data obtained from our online survey respondents.

In order to develop a *should minus want score* for each film in the Quickflix DVD library using the survey data from 145 subjects described above, we ran an ordinary least squares (OLS) regression to predict survey respondents' average *should minus want scores* of the 500 Quickflix films from our survey (see Table 1.1). We employed analytic weights in our regression to control for the fact that different numbers of subjects rated each film. The predictors in our regression include all of the quantifiable characteristics of a film that were provided to us by Quickflix: 21 genre dummy variables, the average subscriber's rating of the film, the number of years since the film was released in theatres, the number of days since the film was released on DVD, dummy variables indicating the film's OFLC rating,² the number of characters in the film's title, and the number of other films in the Quickflix rental database that were released by the same studio. Regression (1) in Table 1.1 explains 44% of the variance in films' average *should minus want scores*.

We extrapolate from our sample of 500 films to the 17,258 films in the Quickflix movie database and give each film a *should minus want score* (*SMW score*) based on the coefficients in regression (1). According to this classification scheme, the movie with the lowest *SMW score* in our database is "The Story of Ricky," a violent, futuristic, sci-fi horror film from 1988, and a film that seems intuitively likely to be a strong *want* for anyone who would choose to rent it. The movie with the highest *SMW score* in our

² The Australian Office of Film and Literature Classification (OFLC) provides films with ratings based on the offensiveness of their content (www.oflc.gov.au).

database is “Kokoda Frontline,” an Australian, Oscar-winning documentary from 1942 about the Kokoda campaign in Papua New Guinea during World War II, a film that seems intuitively likely to be a strong *should* for anyone who would choose to rent it. We then standardize these scores across the 17,258 films in the Quickflix library.³

³ If we replicate these procedures to develop a standardized *should minus want score* using the second set of film ratings discussed above, which were provided by five research assistants, the correlation between the two sets of ratings across the 17,258 films in our database is 0.9341 (p-value < 0.0001).

Table 1.1
PREDICTING A MOVIE'S AVERAGE SHOULD MINUS WANT SCORE

	Average Should Minus Want Score from Survey (1)
Intercept	-0.6128
Number of Characters in Film Title x 10 ²	-0.5069
Number of Films Released by Same Studio in Quickflix Library x 10 ³	0.6732
Average User Rating of Film x 10 ²	0.5435
Years Since Film's Release in Theaters	0.0216***
Days Since Film's Release on DVD x 10 ⁴	0.5400
Film Rated R	-1.4142***
Film Rated PG	-1.1275**
Film Rated MA	-0.9434**
Film Rated M15	-0.9854
Film Rated M	-1.1670***
Film Rated G	-0.9747**
Action Film	-0.3636**
Adventure Film	-0.0448
Anime Film	-1.0729***
Arthouse Film	0.0331
Australian Film	1.1523
Children's Film	-0.7641**
Comedy Film	-0.8284***
Crime Film	-0.7289***
Documentary Film	1.9466***
Drama Film	0.4830***
Family Film	-0.5135**
Fantasy Film	-0.2983
Foreign Film	0.3406
Horror Film	-1.0109***
Lifestyle Film	0.1081
Music Film	-0.0772
Performance Film	-0.8155
Romance Film	-0.5658***
Science Fiction Film	-0.6727***
Sports Film	-0.5500
Television Film	-0.4422**
Thriller Film	-0.5886***
Analytic Weights	Yes
Observations	500
R ²	0.4392

Column (1) reports the OLS coefficients from regressions of average *should minus want scores* of films on various attributes of each film. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

4. Results

A. Holding Time

We address the question of whether or not Quickflix customers exhibit the behavior predicted by models of present bias by running a series of regressions. First, we examine the influence of a movie's *should minus want score* on how many days a customer holds that film. A combination of a model of present bias with our definitions of relative *want* and *should* goods suggests that the higher a movie's *should minus want score*, the more likely a customer will be to postpone watching it, leading her to hold it longer. In Table 1.2, we present the results of an OLS regression estimating the relationship between the logarithm of how many days a customer holds a movie before returning it and that movie's *should minus want score*.⁴ In this regression, the explanatory variables include a measure of the movie's *should minus want score*, the rank of the movie in a customer's queue when it was shipped, the number of days the movie spent in the customer's queue before it was rented, the number of movies the customer had rented from Quickflix since January 1, 2006 when the movie was shipped, the length of the movie in question, dummies indicating the day of the week when the movie was shipped, and dummies indicating the week of the year when the movie was shipped. This regression also includes customer fixed effects, and standard errors are clustered by customer.

⁴ Our outcome variable is the logarithm of a movie's holding time rather than the raw holding time because it seems more appropriate to assume consumers increase the relative rather than the absolute holding time of a film based on its position along the *should/want* spectrum. However, our findings are robust to examining raw holding time.

The coefficient on the *SMW score* of a film in regression (2) indicates that holding all else constant, a one standard deviation increase in a movie's *SMW score* is associated, on average, with a 2% within-customer increase in how many days the movie is held. To put this in context, the results from regression (2) indicate that for the same customer, "Kokoda Frontline" will be held, on average, 17% longer (an average of 1.5 days longer) than "Alien vs. Predator," a lowbrow 2005 action, sci-fi thriller that received one of the lowest *should minus want scores* of the 17,258 films in the Quickflix library. Figure 1.1 illustrates this result graphically.

Table 1.2
THE EFFECT OF A MOVIE'S SMW SCORE ON HOLDING TIME

	Log(Holding Time) (2)
Should Minus Want Score	0.0206*** (0.0018)
Movie's Rank in Customer's Queue When Shipped	-0.0002* (0.0001)
Days Movie Spent in Customer's Queue	0.0002*** (0.0000)
Customer's DVD Rentals Since January 1, 2006	0.0017*** (0.0002)
Movie's Length (in minutes)	0.0001*** (0.0000)
Day of the Week Movie Shipped Fixed Effects	Yes
Week of the Year Fixed Effects	Yes
Customer Fixed Effects	Yes
Observations	101,545
Customers	4,474
R²	0.5294

Column (2) reports OLS coefficients from a regression of the log of the number of days a customer held a movie on the movie's *should minus want score*, controlling for the other variables listed. Robust standard errors clustered at the customer-level are in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

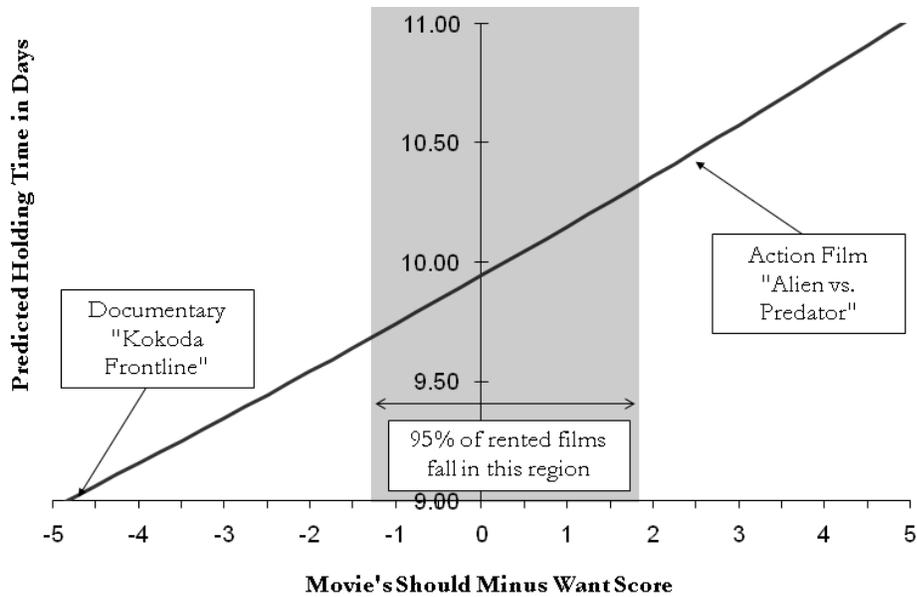


Figure 1.1: Illustration of the relationship between a film’s *SMW score* and its predicted holding time.

B. Reversals in Preferences

Next, we test the prediction that people are more likely to rent one movie before another but reverse the order in which those movies are watched (and thus returned) when the first movie rented receives a higher *should minus want score* than the second. In order to test this prediction we create a data set in which each observation corresponds to an instance in which a Quickflix customer rented two movies, one after the other, and the second movie was delivered to that customer at least one day before the first had been received by a Quickflix return center. We only include such an event in our data set if the first movie had a higher ranking in the customer’s queue when it was mailed than the second movie, an indication that the customer explicitly preferred the first movie to the second when making a decision that would take effect in a future period about which movie to watch. We also exclude all observations where the first rental in a pair of

sequential rentals was the second rental in a previous pair (to avoid including correlated observations). Of the 11,964 sequential rentals in our resulting data set, we observe 1,478 reversals in preferences. To create a measure of how much more of a *should* movie and less of a *want* movie the first film rented is relative to the second film, we subtract the *SMW score* of the movie that was rented second (movie 2) from the *SMW score* of the movie that was rented first (movie 1). We call this variable the *movie 1 SMW premium*. Its mean value in our sample of sequentially rented movies is -0.001 and its standard deviation is 1.20. Of the 6,019 sequential rentals in which the *movie 1 SMW premium* is positive, we observe reversals in preferences at a rate of 13.3%; and of the 5,945 sequential rentals in which the *movie 1 SMW premium* is negative, we observe reversals in preferences at a rate of 11.3%.

In Table 1.3, we present the results of two of ordinary least squares (OLS) regressions estimating the relationship between the probability of an intertemporal reversal in preferences and the *movie 1 SMW premium* over movie 2, controlling for the difference between the films' lengths and customer fixed effects and clustering standard errors by customer. Regression (3) demonstrates that for each additional standard deviation by which movie 1's *SMW score* exceeds that of movie 2, the probability of a reversal in preferences increase by 0.8% (an approximately 7% increase from the mean 12% probability of a reversal in preferences). See Figure 1.2 for an illustration of this effect. In regression (4), we replace our continuous measure of movie 1's *should minus want premium* over movie 2 with a dummy variable indicating whether or not movie 1's *SMW score* exceeds that of movie 2. Regression (4) demonstrates that when movie 1's

SMW score exceeds movie 2's, the probability of a reversal in preferences is 1.3% higher than it would be otherwise (an approximately 11% increase from the mean 12% probability of a reversal in preferences). Running these analyses with a conditional logit model including customer fixed effects and clustered standard errors yields nearly identical results.

The increases in the likelihood of a reversal in preferences reported in Table 1.3 are conservative estimates of the effect we seek to quantify because many of the data points included in our analyses may not coincide with situations in which a customer had an actual opportunity to reverse her preferences. In some cases, movie 2 must have arrived in a customer's home after movie 1 had been watched or even mailed back to Quickflix.⁵ Each point included in our data set that corresponds to a situation in which a customer did not have an opportunity to reverse her preferences necessarily reduces the change in the probability of a reversal in preferences we are able to associate with a change in the *movie 1 SMW premium*.

⁵ Because we know only the dates when return centers received films from customers and the dates when they shipped new movies to customers and not how long shipments spent in the mail, the best we can do is to assume all shipments spent one day in the mail, which is almost certainly an underestimate. Our finding that the probability of a preference reversal increases as the *movie 1 SMW premium* increases is sensitive to this assumption: the coefficient on our main effect increases, for example, the more days we assume shipments spend in the mail. However, such assumptions about shipment time, when false, might bias our results upward by selecting on films that have a tendency to spend longer in customers' homes, so we make the most conservative possible assumption about shipping time in the analyses we present.

Table 1.3
THE EFFECT OF A MOVIE'S SMW SCORE ON REVERSALS IN PREFERENCES

	Preference Reversal (3)	Preference Reversal (4)
Movie 1 Should Minus Want Premium	0.008*** (0.003)	
Movie 1 Received a Higher SMW Score than Movie 2		0.013** 0.007
Movie 1 Length in Minutes Minus Movie 2 Length in Minutes x 10³	0.018 0.028	0.018 0.028
Customer Fixed Effects	Yes	Yes
Observations	11,964	11,964
Customers	3,079	3,079
R²	0.327	0.326

Columns (3) and (4) report OLS coefficients from a regression to predict whether or not a customer exhibited a reversal in preferences based on different measures of the should minus want scores of movies in the customer's choice set. Robust standard errors clustered at the customer-level are in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

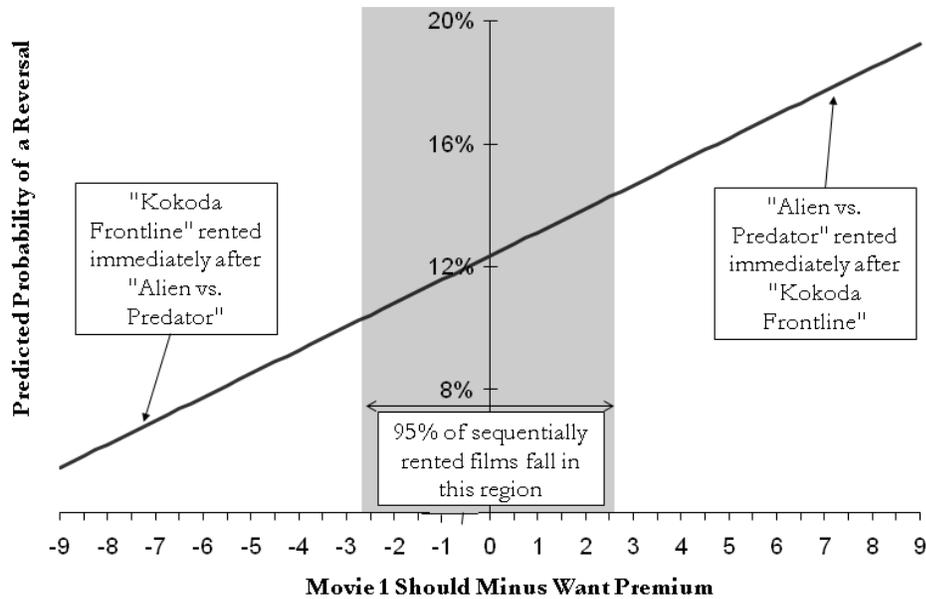


Figure 1.2: Illustration of the relationship between the *movie 1 SMW premium* when movie 1 is rented immediately before movie 2 and the predicted probability that a customer will reverse her preferences and return movie 2 before movie 1.

C. Comparing Our Should Minus Want Score to Other Available Predictors of Holding Time

We next investigate the extent to which our *should minus want score* captures the key components of a film that predict how long a Quickflix customer will postpone watching it. Regression (5) in Table 1.4 presents the result of an OLS regression conducted to predict the logarithm of the number of days a customer will hold a movie before returning it using the same predictors that were used in regression (1) to predict the *should minus want scores* survey participants gave to a sample of 500 Quickflix movies. The regression in Table 1.4 includes the same control variables, fixed effects, and clustered standard errors that were used in regression (2). The correlation between the coefficients on each of the movie descriptor variables used as predictors in regression (5) and the coefficients on each of these same predictor variables in regression (1) is 0.53 (see Figure 1.3 for illustration). This suggests that our *SMW scores* capture the essence of those characteristics of a DVD that predict how long a Quickflix customer will postpone watching it.

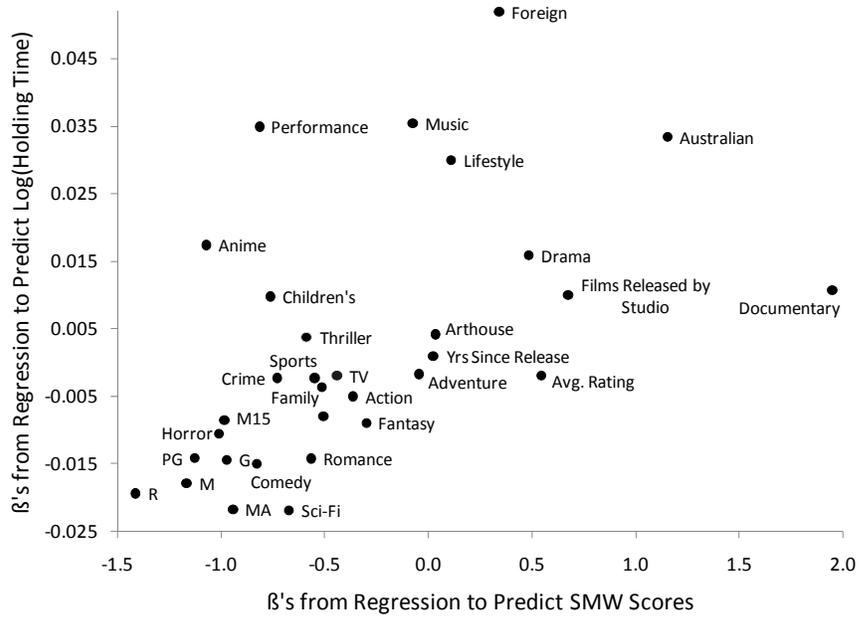


Figure 1.3: Illustration of the correlations between the β coefficient estimates in Regressions (1) and (5).

Table 1.4

THE EFFECT OF A MOVIE'S QUANTIFIABLE ATTRIBUTES ON HOLDING TIME

	Log(Holding Time) (5)
Number of Characters in Film Title x 10 ²	-0.0079
Number of Films Released by Same Studio in Quickflix Library x 10 ³	0.0129
Average User Rating of Film x 10 ²	-0.0019
Years Since Film's Release in Theaters	0.0010***
Days Since Film's Release on DVD x 10 ⁴	0.0787***
Film Rated R	-0.0194
Film Rated PG	-0.0142
Film Rated MA	-0.0217
Film Rated M15	-0.0086
Film Rated M	-0.0179
Film Rated G	-0.0144
Action Film	-0.0050
Adventure Film	-0.0017
Anime Film	0.0174
Arthouse Film	0.0042
Australian Film	0.0334***
Children's Film	0.0098
Comedy Film	-0.01496***
Crime Film	-0.0023
Documentary Film	0.01069
Drama Film	0.0159***
Family Film	-0.0037
Fantasy Film	-0.0090
Foreign Film	0.0520***
Horror Film	-0.0105
Lifestyle Film	0.0299*
Music Film	0.0354***
Performance Film	0.0349*
Romance Film	-0.0142**
Science Fiction Film	-0.0219***
Sports Film	-0.0023
Television Film	-0.0020
Thriller Film	0.0038
Movie's Rank in Customer's Queue When Shipped	-0.0003**
Days Movie Spent in Customer's Queue	0.0001***
Customer's DVD Rentals Since January 1, 2006	0.0017***
Movie's Length (in minutes)	0.0001***
Day of the Week Movie Shipped Fixed Effects	Yes
Week of the Year Fixed Effects	Yes
Customer Fixed Effects	Yes
Observations	101,545
Customers	4,474
R ²	0.5301

Column (5) reports the OLS coefficients from regressions of the log of the number of days a customer held a movie on various attributes of that movie. Robust standard errors clustered at the customer-level are in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

D. Customer-Level Analyses

In addition to examining average levels of present bias across customers by including all individuals in our database in regressions with customer fixed effects and clustered standard errors, we replicate our primary analyses at the customer level. This allows us to determine what percentage of customers appear to exhibit present bias as well providing a second measure of the magnitude of the effects of interest.

In our first set of customer-level analyses, for each of the 4,474 customers included in the holding time regressions described in Section 4.A we run a regression to predict the logarithm of the number of days a customer holds a movie before returning it with a single predictor variable: the movie's *SMW score*. Of the 3,915 customers who rented enough movies for us to estimate a beta coefficient and associated standard error for the single predictor variable in their OLS regression, the coefficient estimated on the *SMW score* variable is positive 55% of the time (binomial test, $N = 3,915$, $H_0: 55.3\% = 44.7\%$ can be rejected, $p < 0.001$). The weighted average beta estimate on our primary predictor variable (weighted by the inverse of a coefficient estimate's standard error to account for differences in the precision of each beta estimate) is 0.047. The average number of observations included in these 3,915 regression equations was 25.7 (standard deviation = 20.9).

In our next and final set of customer-level analyses, for each of the 3,079 customers included in the regressions examining reversals in preferences described in Section 4.B, we run a regression to predict the probability of a reversal in preferences at the individual level with a single predictor variable: the *movie 1 SMW premium*. Of the

818 customers who exhibited enough reversals in preferences for us to estimate a beta coefficient and associated standard error for the single predictor variable in their OLS regression, the coefficient estimated on the *movie 1 SMW premium* is positive 55% of the time (binomial test, $N = 818$, $H_0: 54.8\% = 45.2\%$ can be rejected, $p < 0.01$). The weighted average beta estimate on our primary predictor variable (again, weighted by the inverse of a coefficient estimate's standard error to account for differences in the precision of each beta estimate) is 0.058. The average number of observations included in these 818 regression equations was 6.4 (standard deviation = 3.0).

The results of these analyses are consistent with the findings we presented in sections 4.A and 4.B and provide alternative effect size estimates. The effect sizes estimated here are two-and-a-half to seven times as large as those estimated in our fixed effects regressions. These analyses also give us a sense of the percentage of customers in our data who exhibit present bias, although it is important to note that the customers included in these analyses are on average more frequent renters than those included in our primary analyses, which may bias these numbers.

E. Addressing Alternative Explanations for Our Findings and Seeking Evidence of Learning

Besides present bias, there are a number of potential alternative explanations for our findings, which we will attempt to rule out in this section. The first is that movies with higher *SMW scores* are also movies that people like more. As a result of this, people hold onto these types of movies for longer periods of time in order to watch them repeatedly, lend them to friends, or draw out the viewing experience. There are several

reasons we believe we can rule out this explanation for our results. First, assuming a movie's popularity (which we quantify as the number of times it was rented in our data set divided by the number of days when it was available for rent) is a reasonable proxy for how well people like a movie, if this alternative explanation were correct, we would expect a movie's *SMW score* to be positively correlated with its popularity. In fact, we find that this popularity measure is significantly negatively correlated with a movie's *SMW score* across the 17,258 movies in our dataset ($\rho = -0.11$; $p < 0.001$).

Other ways to examine the plausibility of this alternative hypothesis are to see if our primary results change if we: (a) include popularity as a predictor in our primary regression analyses or (b) restrict our primary regression analyses so they only include observations involving popular movie rentals. When we add the popularity measure described above to the set of explanatory variables included in regression (2) to predict a movie's holding time, we find that a film's popularity is significantly negatively associated with its holding time, and the addition of this variable does not meaningfully affect the estimated coefficient on a movie's *SMW score* or its statistical significance. Similarly, when we run regression (2) to predict a movie's holding time and restrict our sample to include rentals of only the 200 most popular Quickflix movies, our main effect remains significant, and our estimate of its effect size increases by over 30%. Turning to our analyses of reversals in preferences, including a variable that quantifies the popularity premium of the first of two sequentially rented movies when we run regression (3) to predict the probability of a reversal in preferences also has no meaningful effect on our estimate of the coefficient on our primary predictor variable (the *movie 1 SMW premium*)

or on its statistical significance. In addition, movie 1's popularity premium is negatively related to the probability of a reversal in preferences. Finally, restricting our analysis of reversals in preferences to include only particularly popular film titles again increases the estimated beta on the *movie 1 SMW premium*, this time by nearly 80%.⁶ Together, these results suggest that our findings are not driven by people's preference for *should* movies and resulting tendency to hold onto these types of films for longer.

Another potential alternative explanation for our results is that people rarely find themselves in the mood for a *should* movie, but when they do, having a *should* movie on hand is extremely valuable. As a result, people hold *should* movies longer than *want* movies, but it is rational for them to do so because of the high "option value" of these films. If this is truly the source of our finding that *should* films are held longer than *want* films, and if it is not a rationalization people provide for their tendency to procrastinate about watching *should* films, then we would not expect to see the same customer with more experience renting from Quickflix attenuate her tendency to hold *should* films longer than *want* films. However, if what we are observing is irrational procrastination, customers with more DVD rental experience ought to learn about their present bias and take steps to curb it.

To pit the alternative explanations for our primary findings outlined above against one another, we run a new regression to predict a movie's holding time in which we interact the (standardized) number of DVDs a customer has rented from Quickflix since

⁶ In this case we restrict ourselves to the top 1,500 films because we lose too many observations to estimate within-person effects with any precision if we restrict to ourselves to observations involving two top 200 films rented sequentially.

January 1st, 2006 (our proxy for “experience” with DVD rentals) with a movie’s *SMW score* (see Table 1.5, Regression 6). The significant negative coefficient on the interaction term in regression (6) indicates that the more experience a customer has renting DVDs from Quickflix, the less that customer will procrastinate about returning *should* films.⁷ These results are robust to including only observations involving rentals of the 200 most popular Quickflix movies. In addition, customer-level regressions run on customers who rented more than 20 DVDs during the period examined (giving them adequate opportunities for learning) and which include the predictors *SMW score*, rentals year-to-date and the interaction between these two terms also yield a negative interaction coefficient significantly more often than not (binomial test, $N = 1,900$, $H_0: 51.4\% = 48.6\%$ can be rejected, $p < 0.05$). It is also worth noting that the newest Quickflix customers exhibit a steeper learning curve than older Quickflix customers,⁸ and that customers tend to exhibit more variance in film holding time the longer they have been Quickflix subscribers (so our findings in Table 1.5 cannot be explained by a simple reduction in holding time variance with experience story). Together, the above results suggest that customers learn about their present bias and take successful steps to curb their tendency to hold *should* films longer than *want* films as they gain experience renting

⁷ Running the same type of analysis with our preference reversal regression specification yields a coefficient on the interaction between the number of rentals year-to-date when movie 1 is rented and the *movie 1 SMW premium* that is directionally consistent with this story (more rentals attenuate the impact of the *movie 1 SMW premium* on the probability of a preference reversal), but this effect is not statistically significant. However, these regressions have considerably less power than our holding time analyses because of the zero-one outcome variable and reduced sample size.

⁸ We know the order in which Quickflix customers joined the service, and we observe that the 25% of customers who most recently adopted the service exhibit a steeper learning curve than the 50% of customers who most recently adopted the service, who in turn exhibit a steeper learning curve than the entire customer population.

DVDs. If customers were holding *should* DVDs longer than *want* DVDs for a rational reason (such as the high option value of *should* movies), we would not expect to see this pattern of “learning.” We thus believe we can rule out this alternative “rational” explanation for our results with the aforementioned evidence, which suggests that it may be possible for individuals to learn improved self-control. It is also interesting to note that customers actually rent films with slightly higher *SMW scores* as they gain more rental experience, although this trend is insignificant. This suggests that customers are not learning to stop renting the types of films that they procrastinate about watching but that instead customers are learning strategies to prevent themselves from exhibiting so much present bias.

Table 1.5
THE EFFECT OF A CUSTOMER'S EXPERIENCE ON HOW MUCH A MOVIE'S
SMW SCORE AFFECTS ITS HOLDING TIME

	Log(Holding Time) (6)
Should Minus Want Score	0.0208*** (0.0018)
(SMW Score) x (Z Customer's DVD Rentals Since Jan. 1, 2006)	-0.0079*** (0.0017)
Z Customer's DVD Rentals Since January 1, 2006	.02951*** (0.0042)
Movie's Rank in Customer's Queue When Shipped	-0.0002 (0.0001)
Days Movie Spent in Customer's Queue	0.0002*** (0.0000)
Movie's Length (in minutes)	0.0001*** (0.0000)
Day of the Week Movie Shipped Fixed Effects	Yes
Week of the Year Fixed Effects	Yes
Customer Fixed Effects	Yes
Observations	101,545
Customers	4,474
R²	0.5295

Column (6) reports OLS coefficients from a regression of the log of the number of days a customer held a movie on the movie's *should minus want score* and the interaction of this variable with the number of films the customer has rented since January 1, 2006, controlling for the other variables listed. Robust standard errors clustered at the customer-level are in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

To further assess the plausibility of the alternative explanations for our primary findings discussed above, we also conducted a survey in which we asked people with experience renting DVDs what they think has caused them in the past to exhibit the type of behavior we detected in our primary analyses. One hundred and twenty-one subjects who signed up to participate in online paid polls conducted by the market research firm Zoomerang gave a response other than “not applicable” to a question asking why, if they had ever rented a *should* movie before a *want* movie but returned the movies out of order, they thought they did so. Of the three possible explanations subjects could select, just

4.1% of respondents believed they had exhibited this behavior because they “liked the *should* DVD so much more than the *want* DVD that they held onto it longer.” On the other hand, 64.5% of respondents claimed they “watched the *want* DVD first because when the moment to choose a DVD to watch arose, the *want* DVD was just more appealing than the *should* DVD” – an explanation suggesting that present bias drives the time-inconsistent preferences we observe in our data set. The remaining 31.4% of respondents believed they “watched the *want* DVD first because [they were] holding the *should* DVD on hand so that [they] would have it available for when [they were] in the mood to watch it,” an explanation consistent with a rational “option value” story or with the possibility that present biased renters are poor forecasters of their future moods but naïve about this weakness. These survey results provide additional evidence that the time-inconsistent preferences we observe in our Quickflix data set result primarily from present bias. When asked to explain our findings, the vast majority of subjects with online DVD rental experience point to the explanation we classify as “procrastination” (binomial test, $N = 121$, $H_0: 64.5\% = 35.5\%$ can be rejected, $p < 0.001$).

One could construct other explanations for our results besides those addressed above and besides our explanation that renters are present biased. However, in light of the considerable body of research suggesting that people are present biased, including Read et al.’s (1999) laboratory study of present bias and movie choice, and in light of the analyses presented above to rule out alternative explanations, we believe that present bias is the most compelling explanation for our findings.

5. Discussion

The results presented above demonstrate that, consistent with the combined predictions of models of present bias and our definition of relative *should* and *want* goods, the more *should* characteristics and the fewer *want* characteristics a DVD has, the longer a Quickflix customer will postpone watching that DVD. Also consistent with models of individuals as present biased and our definitions of relative *want* and *should* goods, the probability that a customer will exhibit a reversal in preferences increases when two films are rented sequentially the relatively more *should* and fewer *want* characteristics the first film rented has than the second.

Our analyses offer the first field demonstration that combining a model of consumers as present biased with a model of goods as ranging from extreme *wants* to extreme *shoulds* correctly predicts the way people's rankings of a series of goods will change when they choose for the present versus the future. Our findings are consistent with past work on time-inconsistent preferences, but also extend previous field studies of present bias and choice, which have only examined whether people are less likely to engage in a *should* option when choosing for now versus later. Our evidence suggests that the effects of present bias on which alternative people will select given an array of choices can be quite meaningful in the field. We believe this discovery should increase the importance researchers assign to the results of previous laboratory studies about the effects of present bias on decision making.

In addition, our analyses provide early evidence that experience may attenuate people's degree of present bias. One implication of this finding is that parties with more

experience making decisions in a certain domain may better recognize people's tendency to exhibit present bias when making choices in that domain and may take advantage of this "weakness" in their-less experienced counterparts. For example, baseball team managers with extensive experience negotiating players' contracts may realize that players are present biased and value up-front pay (i.e., signing bonuses) more than their yearly salary, an observation that could allow those managers to structure deals that are psychologically more attractive to players, yet less beneficial to them from a normative perspective and more attractive to the sophisticated managers. Policymakers might want to prevent experienced participants in markets who are sophisticated about present bias from taking advantage of less-experienced, present biased individuals.

Our findings also have implications for companies that loan items to consumers. Such companies should be able to forecast how long customers will hold different items they have borrowed based on the extent to which those items are *should* versus *want* goods. Specifically, we believe rental companies would be wise to expect customers to return *want* goods faster than *should* goods. Our results have similar implications for online and catalogue retailers that offer different shipment options to customers. Our findings suggest that *want* goods will be in higher demand for immediate delivery than for delayed delivery, while *should* goods will exhibit the opposite demand pattern. Finally, our study has implications for consumers, many of whom may be doing an ineffective job of maximizing their utility over time due to their impulsivity. Such consumers would presumably benefit from becoming aware of their present bias, as this would allow them to take steps to curb harmful impulsive behaviors.

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Appendix

Should/Want DVD Survey

Research Participation Consent Form

DVD Categorization: An Investigation of Different Types of Films and Television Programs

The purpose of this study is to obtain ratings of a sample of DVDs along two different dimensions. In the study, you will be provided with short descriptions of a sample of 60 DVDs and asked to rate each DVD's conformity to categories we will describe. Your participation in this study will take about 45 minutes. If you have any questions about the study, please e-mail us, and we will respond promptly.

For your participation in the study, you will receive a minimum of \$15.00.

You will be rating DVDs along category scales that range from 1 to 7. You will be given an "accuracy" score based on your DVD ratings. For each DVD you classify within one point of the average rating across survey participants who also rated that DVD, your accuracy score will be increased by one. The 20% of participants who receive the highest accuracy scores will be paid a bonus of \$10.00.

Your participation in this study is purely voluntary, and you may withdraw your participation or your data at any time without any penalty to you. Your participation in this study will remain confidential, and your identity will not be stored with your response data.

If you have read the description of this study, your questions have been answered, and you give your consent to participate, please click on the link below and you will be redirected to the online study.

Study Link: [DVD Survey](#)

Harvard University has a Standing Committee on the Use of Human Subjects in Research (CUHS) to which complaints or problems concerning any research project may, and should, be reported if they arise. If you have concerns about this project, please contact Toni Wegner at twegner@hbs.edu or telephone: 617-496-9952.

[NEXT PAGE]

DVD Survey

Unless you are instructed to do so, please do not use the back or refresh buttons on your browser during this survey.

Dear Survey Participant,

Thank you in advance for taking the time to participate in this research project. Before beginning the survey, you will be introduced to two concepts. You will then be briefly quizzed on these concepts (to insure that you understand them) before you are asked to complete the survey.

Concept Introduction

"Want" DVDs: As part of this survey, you will be asked to score a number of films and tv shows on a scale from 1 (not a "want" DVD) to 7 (a strong "want" DVD). A "want" DVD is one that someone would choose to see for the pure enjoyment of it. There may be additional reasons for seeing the DVD - it may be intellectually stimulating or recommended by people the viewer would like to impress, but these reasons are *not* to be taken into account when determining the "want" score of the DVD. The "want" score is intended to reflect the extent to which someone's decision to watch this DVD would be indulgent and pleasure-based. *Example of a strong "want" DVD: A summer blockbuster, featuring attractive movie stars, with an appealing advertising campaign.*

"Should" DVDs: You will also be asked to rate a number of DVDs on a scale from 1 (not a "should" DVD) to 7 (a strong "should" DVD). A "should" DVD is one that someone would feel compelled to watch. This might be because the DVD is expected to improve the viewer in some way - intellectually, socially (because of recommendations from people the viewer would like to impress), or otherwise. The "should"

score ought to reflect the extent to which someone's choice to watch the DVD would be made for virtuous, self-improving reasons, regardless of other potential factors. *Example of a strong "should" DVD: A DVD that audiences feel compelled to watch for their betterment as human beings - in other words, for reasons besides sheer pleasure.*

IMPORTANT: When rating the DVDs in this survey, you should imagine that someone is standing in a video rental store and has just chosen to rent the DVD in question. Give the DVD "should," and "want" scores based on the feelings you imagine the renter has toward the DVD that he or she is renting. You should **not** give the DVDs in this survey "should" and "want" scores based on how much you **personally** want to see them or feel that you should see them.

Please note that "want" and "should" DVDs are not mutually exclusive - a DVD may receive both a high "want" score and a high "should" score.

Comprehension Check

1. A "want" DVD:
 - (a) is a DVD that someone would only watch because of its outstanding reviews from critics:
 True False
 - (b) is a DVD that someone would choose to watch for the frivolous pleasure of doing so:
 True False
2. A "should" DVD:
 - (a) cannot also receive a high "want" score:
 True False
 - (b) is a DVD that someone would feel compelled to watch in order to improve him or herself:
 True False
3. When answering the questions in this survey you should:
 - (a) imagine that someone has elected to see the DVD in question, and give it a "should" score and a "want" score based on the motivations you imagine that person must have for choosing to watch the DVD:
 True False
 - (b) simply call upon your **own** feelings about how much you "want" to see a DVD or think you "should" see a DVD:
 True False

Submit Comprehension Check

[NEXT PAGE]

Below are the correct answers to the comprehension check.

Questions you answered correctly are marked with a ***, and questions you answered incorrectly are marked with an **X**. If you would like to review our concept definitions in another browser window, please click [here](#). When you have finished reviewing the answers to the comprehension check, please click on the button labeled "Proceed."

Comprehension Check

- 1.
2. A "want" DVD:
 - a. is a DVD that someone would only watch because of its outstanding reviews from critics:
(Correct Answer -- False) ***
 - b. is a DVD that someone would choose to watch for the frivolous pleasure of doing so:
(Correct Answer -- True) ***
3. A "should" DVD:
 - a. cannot also receive a high "want" score: (Correct Answer -- False) ***
 - b. is a DVD that someone would feel compelled to watch in order to improve him or herself: (Correct Answer -- True) ***
4. When answering the questions in this survey you should:

PAPER 2:

Mental Accounting and Small Windfalls:

Evidence from an Online Grocer

(with John Beshears, Harvard Business School)

In press, Journal of Economic Behavior and Organization

AUTHOR'S NOTE: We thank Max Bazerman, Todd Rogers, Nava Ashraf, George Baker, Jerry Green, Lisa Kahn, David Laibson, George Loewenstein, Mihai Manea, Sendhil Mullainathan, David Parkes, seminar participants at Harvard University, and a very helpful set of reviewers for their insightful feedback on this paper. We are also grateful to the employees of the online grocer who generously shared their data, time, and ideas with us and to Rezwan Haque, Zach Sharek, and Fan Zhang for their assistance with this project. This research was conducted while John Beshears was supported by a National Science Foundation Graduate Research Fellowship. The authors would like to thank Harvard Business School for funding support.

1. Introduction

In the course of daily life, people occasionally receive small windfalls. Every so often we are handed a gift certificate for five dollars off a meal at our favorite local restaurant, find a ten dollar bill on the street, or win twenty dollars in an impromptu game of poker. According to the standard permanent income or lifecycle theory of consumption (Friedman, 1957; Modigliani and Brumberg, 1954),⁹ these types of small windfalls should have no noticeable effect on spending decisions because such windfalls constitute meaningless changes to lifetime wealth. However, if you have ever been the recipient of a small windfall, you may remember thinking about ways to put this unexpected cash to use buying items you might not have otherwise purchased. This kind of behavior can be interpreted as an example of “mental accounting” (Thaler and Shefrin, 1981). In this paper, we present evidence supporting predictions made by the theory of mental accounting about the way consumers respond to small windfalls in the domain of online grocery shopping. We also discuss other psychological explanations that could account for our findings.

Thaler and Shefrin have argued that people create mental accounting systems, similar to the way organizations create accounting systems, to organize and manage their financial decisions (Thaler and Shefrin, 1981; Thaler, 1985; Shefrin and Thaler, 1988; Thaler, 1990; Thaler, 1999). According to this theory, rather than grouping all decisions together and optimizing consumption choices over a life-long horizon, people categorize their activities into “mental accounts” and make decisions within

⁹ The “standard” permanent income or lifecycle theory refers to the certainty-equivalent version.

the context of these narrow spending and saving categories. An implication of the theory that individuals create mental accounts to manage their consumption decisions is that they will respond to small, unanticipated windfalls by spending them immediately and purchasing items that they would not buy unless their budget set were significantly expanded. Consumers who engage in mental accounting will behave as if they have received a meaningful wealth shock when they receive a small windfall because that is indeed the case within the relevant, narrowly framed mental account.

The theory of mental accounting motivates the hypotheses tested in this paper. However, there are other psychological explanations that can account for the observation that people increase their spending in a given domain in response to a small windfall in that domain. One relevant explanation is that people engage in reciprocity (Rabin, 1993). It is possible that gratitude towards the provider of a small windfall might inspire a desire to reciprocate, which could lead consumers to substitute away from spending money with the windfall provider's competitors and increase their spending with the windfall provider. Alternatively, happiness triggered by the receipt of an unexpected small windfall might cause people to spend money more freely.

It has been demonstrated in the laboratory that people spend more out of unexpected income than out of anticipated income (Arkes et al., 1994). To extend the study of the effect of small windfalls on spending beyond the laboratory setting and to examine the precise items purchased by the recipients of small windfalls, we analyze

a novel data set from an online grocer containing individual-level information about grocery purchases over the course of a year. This data set includes information about the decisions made by thousands of consumers both when they redeem coupons of a certain type for \$10 off their online grocery orders and when they order groceries without any such discount.

A \$10-off coupon of the type examined in this paper can be sent by a first-time patron of the online grocer we collaborated with to any other person she likes. We argue that the date on which a customer receives such a \$10-off coupon is exogenous from the point of view of that customer. Under this assumption, we can estimate the effect of a \$10-off coupon on grocery spending by comparing each customer's orders with coupons to her orders without coupons. When we regress spending for a grocery order on an indicator variable for whether or not the order involved a \$10-off coupon, we find that coupon use increases spending by \$1.59, controlling for customer fixed effects and other factors.¹⁰ We also find evidence that these spending increases are particularly focused on “marginal” grocery items, which we define as items that a customer does not typically purchase.

These results are inconsistent with the standard permanent income or lifecycle theory of consumption, but they are consistent with explanations invoking psychological influences on consumption decisions. As mentioned above, we use the

¹⁰ In this paper, we use the term “spending” to denote the total price of the groceries in a customer's order, ignoring the effects of taxes, delivery fees, and coupons on the customer's out-of-pocket expenses.

theory of mental accounting to motivate our primary hypotheses, but we also discuss other psychological factors that could explain our findings.

The rest of this paper is organized as follows. Section 2 reviews the relevant literature and formalizes our hypotheses about windfall spending. In Section 3 we describe our data set and regression specification. We present our results in Section 4, and Section 5 concludes.

2. Relevant Literature and Hypotheses

A. Related Conceptual Literature

As discussed above, we draw from past research on mental accounting to establish the hypotheses tested in this paper. The previous literature on mental accounting argues that people group their financial resources and expenditures into “mental accounts” and make decisions within the context of those narrowly defined accounts instead of integrating all decisions together in a single optimization problem (Thaler and Shefrin, 1981; Thaler, 1985; Shefrin and Thaler, 1988; Thaler, 1990; Thaler, 1999; Levav and McGraw, in press). A number of factors have been posited as drivers of this behavior. One possibility is that mental accounts help people manage their spending in the face of self-control problems – by budgeting only a certain amount of money towards a category of consumption, people may be better able to resist overspending (Thaler and Shefrin, 1981; Shefrin and Thaler, 1988). Mental accounting has also been discussed as a psychological framing device that complements the prospect theory value function. This value function is concave in gains relative to a reference point, and it is both steeper and convex in losses relative

to that reference point (Kahneman and Tversky, 1979). An individual who judges outcomes according to a prospect theory value function may use mental accounting to integrate or segregate outcomes in order to achieve favorable evaluations when applying the value function to those outcomes (Thaler, 1985).¹¹ Finally, mental accounting may be driven by the need to simplify an otherwise complex decision problem because of limitations on cognitive resources (see, for example, Read, Loewenstein, and Rabin, 1999). A straight-forward prediction of mental accounting is that when consumers receive an unexpected small windfall they will behave as if they have received a meaningful shock to their wealth in the relevant mental account, spending more than usual in that domain and buying items they would not otherwise purchase.

While mental accounting predicts that online grocery spending will be responsive to the receipt of a \$10-off coupon, there are other models motivated by psychological considerations that might also make this prediction. One relevant stream of previous research has demonstrated that people tend to engage in reciprocity (see Rabin, 1993 for a discussion). In a study of reciprocity conducted by Goranson and Berkowitz (1966), subjects worked considerably harder on a laboratory task when their performance improved the pay of someone who had previously helped them than when it improved the pay of someone who had not. If people experience a positive emotional response towards a company (in this case, an online grocer) that provides a small windfall, they may want to engage in reciprocity by

¹¹ Also see Prelec and Loewenstein (1998) for a discussion of the hedonic implications of these kinds of framing effects.

substituting away from spending money with the company's competitors and by increasing their spending with the company. This could also lead people to increase their spending on "marginal" goods with a given company when they receive a small windfall.

Another possibility is that the receipt of a small windfall induces happiness in consumers, which causes them to spend money more freely. Positive affect has not previously been shown to increase spending (see Isen, 2000 or Isen, 2008 for a review), and there is in fact evidence that sadness increases spending relative to a baseline state (Lerner, Small, and Loewenstein, 2004; Cryder et al., 2008).

Nonetheless, it is still possible that the happiness induced by the receipt of a small windfall leads people to spend more than usual. Positive affect has been shown to increase variety-seeking behavior (Kahn and Isen, 1993), so the receipt of a small windfall could lead people to increase their spending on goods they do not usually buy.

B. Related Empirical Literature

Our findings build on past research examining the responsiveness of spending to the receipt of windfalls. A series of papers studying windfalls that were considerably larger than those analyzed in this paper demonstrated that households have a higher propensity to consume out of windfall income than out of regular income and that this propensity to consume decreases as the size of a windfall increases (Bodkin, 1959; Kreinin, 1961; Bird and Bodkin, 1965; Doenges, 1966; Landsberger, 1966; Abdel-Ghany et al., 1983; Keeler, James, and Abdel-Ghany,

1985). Another set of empirical studies has analyzed the response of consumption to anticipated changes in income rather than unanticipated wealth shocks. According to the standard permanent income or lifecycle theory, changes in consumption should coincide with the announcement of an income change and not with the anticipated change itself, but the results of many studies contradict this hypothesis (Poterba, 1988; Wilcox, 1989; Parker, 1999; Souleles, 1999; Souleles, 2002; Johnson, Parker, and Souleles, 2006).¹² In a paper that specifically addresses the implications of mental accounting, Baker, Nagel, and Wurgler (2006) documented a strong response of consumption to the receipt of stock dividends, controlling for total stock returns. This evidence is consistent with mental accounting and inconsistent with standard economic models, which predict that only total returns (not the decomposition of returns into dividends and capital gains) should affect consumption.

Experimental studies have also found evidence consistent with the predictions of mental accounting. Arkes et al. (1994) demonstrated that unexpected small windfalls (\$3 to \$5) are more likely to be spent on gambling or at a basketball game than anticipated windfalls of the same size. Heilman, Nakamoto, and Rao (2002) examined the effect of one-dollar coupons for particular grocery items on the behavior of grocery shoppers and found that the coupons increased consumers' unplanned spending as well as their total spending.¹³ Finally, in research

¹² Others, however, find evidence consistent with the standard permanent income or lifecycle theory (see Hsieh, 2003, for example). For a more thorough review of the literature on excess sensitivity, see Browning and Lusardi (1996).

¹³ Of course, these results may be due to substitution effects induced by category-specific coupons, which change the relative prices of goods. This explanation is supported by the authors' observation that spending increased for goods that are complements to the discounted groceries.

contemporaneous with ours, Abeler and Marklein (2008) studied how restaurant patrons responded to an unexpected windfall in the form of a discount on their bill. They found that customers who received an €8 discount spent an average of €3.52 more than other patrons.

Our results are complementary to those presented in the studies discussed above, but the unique nature of our data set helps to distinguish our contribution from much of the prior literature. Previous field studies have predominantly focused on people's responses to moderate or large windfalls, typically with average values on the order of \$500 (at today's price levels). People may use different decision-making processes when faced with small windfalls as opposed to large windfalls, perhaps relying more heavily on heuristics to govern spending because of the low perceived costs of errors, so it is interesting to study responses to small windfalls separately from responses to large ones, especially if systematic patterns in small-stakes choices can aggregate across multiple decisions to have a large cumulative impact. Another important advantage of our data set is that it allows us to directly examine the purchases customers make after receiving a windfall rather than relying on survey data to determine how windfall income is spent. This feature of the data also enables us to disaggregate total spending to the level of individual grocery items, making it possible to perform a detailed comparison of the products purchased in grocery orders with coupons and those purchased in grocery orders without coupons. Finally, because our data set is from the online grocery domain, we can infer that the \$10 windfalls we study are inconsequential in the context of the overall wealth of the

consumers who receive them and that they do not meaningfully ease these consumers' liquidity constraints. In order to be included in our sample, consumers must be able to afford both internet access and the fees associated with ordering groceries for delivery.

C. Hypotheses

Applying the theory of mental accounting to the online grocery shopping context, we posit that customers assess their online grocery spending in the context of a specific mental account, such as their “weekly living expenses” account or their “monthly groceries” account. Because individuals who engage in mental accounting apply category labels both to expenditures that fall in a particular account and to the financial resources that are available in the account, the \$10-off online grocery coupon that we study is likely to be coded as a windfall in the mental account that includes online grocery spending. Even though the \$10-off coupon represents an immaterial windfall in the context of the online grocery customer's lifetime wealth, it may constitute a meaningful unexpected increase in the financial resources devoted to the mental account that encompasses the customer's current online grocery order. Since resources have limited fungibility across mental accounts, we expect the customer to use the additional financial resources in this mental account to increase expenditures associated with the account, including expenditures on online groceries.

This reasoning underlies the two primary hypotheses we examine in this paper. First, we test the hypothesis that:

H1: The redemption of a \$10-off discount coupon is associated with a significant increase in online grocery spending.

This hypothesis is inconsistent with the predictions of the standard permanent income or lifecycle theory but consistent with the predictions of mental accounting. Second, because the receipt of a \$10-off coupon leads a customer to allocate more money to online grocery purchases than she otherwise would, the coupon's impact on the composition of groceries in a customer's order should be analogous to the impact of a wealth increase in the customer's choice problem over groceries. That is, we expect customers who receive such a windfall to substitute higher-quality products for lower-quality ones and to purchase products that they would not normally purchase unless their budget set were significantly expanded. Our second hypothesis is therefore that:

H2: The redemption of a \$10-off discount coupon is associated with an increase in spending on goods that customers do not purchase in the absence of a coupon.

Our empirical analysis supports both hypotheses.

3. Data Set and Empirical Strategy

A. Online Grocery Business Model

The online grocer we collaborated with operates in North America and serves urban customers. Its customers place orders by visiting a website where they may tour virtual supermarket aisles or search for specific products as they make decisions, one by one, about what items to add to their online shopping carts. Returning

customers have easy access to the lists of items they purchased on their previous shopping trips to facilitate repeat purchases. Customers can schedule a delivery in the near term or many days in advance. During the period studied, the grocer charged a delivery fee for all orders. In addition, customers were required to spend a minimum dollar amount on each order.¹⁴

B. Online Grocery Data Set

We obtained a novel panel data set from the aforementioned online grocery company containing information about the orders placed by all of the company's customers between January 1, 2005 and December 31, 2005. The online grocery company provided a record of each item in each order as well as the price each customer paid for each item, the date of each order, the date of each order's delivery, and the customer who placed each order. In addition, if a discount coupon was used during an order, we were given information about the type of coupon the customer used and the size of the discount he or she received. If a customer modified his or her order, we were told how many times order modifications were made, as well as the first and last dates when the customer modified his or her shopping basket. All customer accounts in our data set are labeled by anonymous, unique ID numbers, and all customer ID numbers are accompanied by the date when a customer first placed an online grocery order. Our online grocery collaborator also provided us with detailed

¹⁴ This minimum dollar amount was well above \$10, so our empirical results are not driven by customers using their \$10-off coupons for orders larger than \$10 and placing orders for less than \$10 without coupons.

information about the items available for purchase through its website, including their category and brand.

We restrict our analysis to customers who made use of a particular \$10-off discount coupon sometime between January 1, 2005 and December 31, 2005. New patrons of the online grocer in 2005 were allowed to send one of these coupons to an e-mail address of their choice, excluding their own. The motivation for offering these coupons was to thank customers who encouraged others to order from the online grocer. We assume that the timing of the receipt of such a coupon is exogenous from the recipient's point of view, since customers have little if any control over when they will receive this coupon.

In total, between January 1, 2005 and December 31, 2005, there were 4,435 customers who used a \$10-off discount coupon of the type described above. We eliminate spending outliers (top 1%), outliers in the number of visits made to the grocer's website during an order (top 1%),¹⁵ any orders that made use of other kinds of discount coupons,¹⁶ orders by customers who never shopped in 2005 without

¹⁵ We eliminate spending outliers and orders involving an unusually large number of visits to the grocer's website so that these observations do not exert undue influence on the results of our regression analyses. We drop orders that are outliers relative to the entire universe of online grocery orders from 2005, not relative to the data set that only includes customers who redeemed a \$10-off coupon in 2005. This procedure eliminates 2,058 data points. Our results do not rely on the elimination of these outliers. In fact, including outliers in the data set strengthens our results considerably.

¹⁶ We eliminate orders involving all other types of discount coupons for two reasons. First, we are concerned that many of these coupons impose conditions on customers when redeemed that may induce atypical shopping behavior. For example, some coupons expire quickly, some impose a higher than usual minimum spending requirement, and some are only redeemable for certain types of groceries. Second, many of these coupons are not awarded at random but are instead offered to customers when they exhibit certain purchasing patterns. We address potential biases resulting from our exclusion of these coupons when we present our results (see Section IV.C). By dropping these orders, we eliminate 7,736 data points.

redeeming a coupon,¹⁷ and each customer's first order of the year.¹⁸ We are left with 34,410 grocery orders placed by 2,889 customers, giving us an average of 11.9 order observations per customer. The average dollar size of an order in this sample is \$150.23, and the average grocery order consists of 59 items. Of the orders in our data set, 3,110 (approximately 9%) involve the redemption of a \$10-off coupon. The average date when a customer in our data set placed her first order with the online grocer is April 21, 2004. For additional summary statistics, see Table 2.1.

Table 2.1
GROCERY ORDER SUMMARY STATISTICS

	Mean	Standard Deviation
Spending	150.23	57.47
Number of Groceries	59.38	23.16
Number of Web Visits for Order	3.88	2.86
Days btw First and Last Web Visits for Order	7.54	16.87
Days Since Last Delivery	17.69	21.20

This table reports grocery order summary statistics describing our primary data set.

Table 2 shows summary statistics about the percentage of a customer's 2005 orders that involved coupon redemptions. The summary statistics presented in this table suggest that online grocery customers did not find ways to send themselves \$10-off discount coupons, as nearly all customers in our data set redeemed just one such coupon in 2005. Another piece of evidence suggesting that customers rarely if ever

¹⁷ We eliminate orders placed by customers who never shopped in 2005 without redeeming a coupon because such customers may be different from the population of customers who shopped both when in possession of a coupon and when no coupon was available. By dropping these orders, we eliminate 696 data points.

¹⁸ In our regression analyses, we control for the amount of time that has elapsed since a customer's previous order. We eliminate each customer's first order of the year because we are unable to calculate this variable for these observations. By dropping these orders, we eliminate 2,889 data points. If we instead include these orders in our sample and drop from our regression specifications the control variables for the amount of time since a customer's previous order, the magnitude and statistical significance of our results are weakened in regression (3) but not in any other regressions.

found ways to send themselves \$10-off discount coupons is that after a customer redeemed her first coupon she placed an average of seven subsequent orders without a coupon. This statistic would be much lower if customers regularly created new accounts with which to send themselves \$10-off coupons. In addition, by dropping all customers' first orders of the year and all orders placed by customers who never shopped without a \$10-off coupon in 2005, we necessarily drop any orders placed by customers who created new accounts solely to receive and redeem \$10-off coupons they managed to send themselves. Finally, even though some customers may have created a new account associated with a new e-mail address in order to place a "first order" with the online grocer and send a \$10-off coupon to another account under their control, new accounts do not give customers access to their previous shopping lists, so customers would have to fill their baskets from scratch without the benefit of easily viewing and selecting items they had previously purchased. The online grocer believes that this creates a fairly strong disincentive for customers to create fake "new" accounts in order to send themselves coupons.

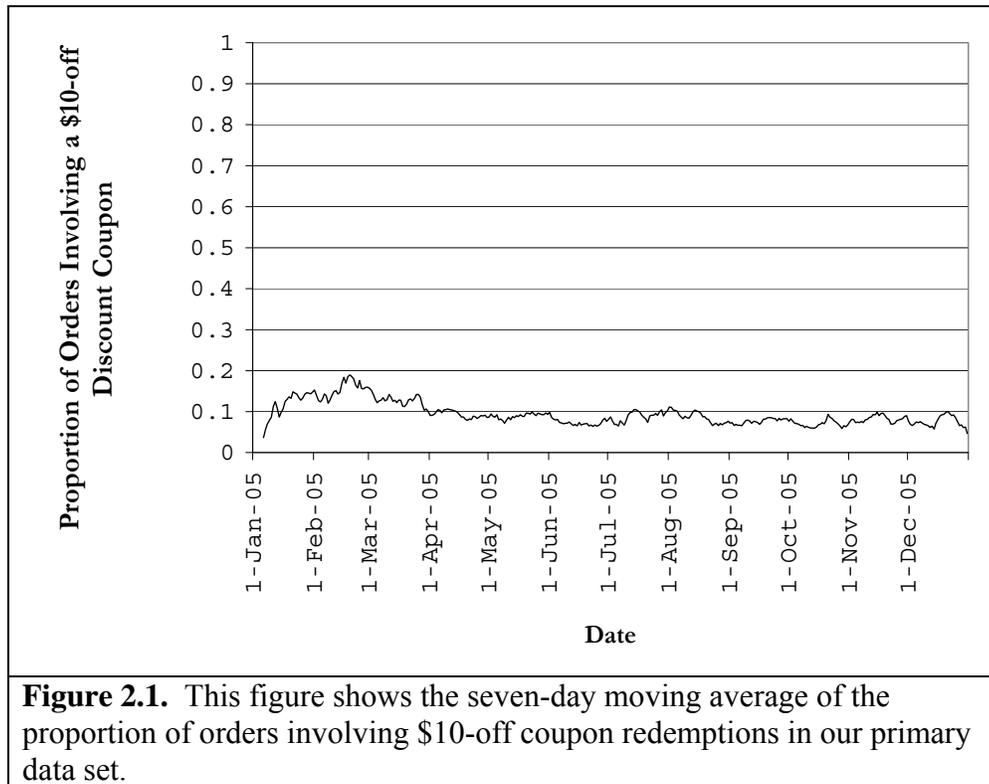
Table 2.2
COUPON USE SUMMARY STATISTICS

	Percentage of a Customer's Orders Involving a Coupon Redemption	Number of Orders per Customer Involving a Coupon Redemption
Min	1.49%	1
25th Percentile	6.67%	1
Median	12.50%	1
75th Percentile	25.00%	1
Max	50.00%	5
Mean	17.95%	1.08

This table reports coupon use summary statistics from our primary data set. For each customer, we calculate the percentage of orders involving a coupon redemption and the number of orders involving a coupon redemption. We then present the distributions of these statistics across customers (Customers = 2,889, Coupons = 3,110, Orders = 34,410).

Throughout the year, a relatively constant proportion of orders placed by the customers in our sample involved the redemption of a \$10-off discount coupon.¹⁹

Figure 2.1 presents a graph over time of the fraction of orders placed that involved the use of such a coupon.



C. Regression Specification

To study the effect of coupon redemptions on spending in our online grocery data set, we use the following regression specification:

$$spending_{it} = \alpha_i + \gamma \cdot coupon_used_{it} + \theta'X_{it} + \varepsilon_{it} \quad (1)$$

¹⁹ Although we do not have detailed information about the lag time between when a customer received such a coupon and when it was redeemed, the online grocer informs us that such coupons are typically redeemed about one month after they are received. Since the median customer in our data set placed 12 orders in 2005, this suggests that when customers receive this type of coupon, they often redeem it on the next grocery order they place.

where $spending_{it}$ is the number of dollars spent by customer i for order t or the logarithm of one plus the number of dollars spent by customer i for order t , α_i is an unobserved customer-specific effect, $coupon_used_{it}$ is a dummy variable that takes a value of one when an order involves the redemption of a \$10-off coupon and a value of zero otherwise, X_{it} is a vector of other variables (including interactions of some control variables with $coupon_used_{it}$), and ε_{it} is the error term. We estimate the equation using a fixed-effects regression and cluster standard errors by customer. Under our assumptions about the timing of coupon receipt, our estimates of the coefficient γ give the effect of coupon redemption on spending.

4. Results

A. Do Customers Spend More When Redeeming a \$10-Off Discount Coupon?

In Table 2.3 we present the results of regressions estimating the relationship between the amount a customer spends on groceries and whether or not she redeems a \$10-off discount coupon of the type described in Section 3.B. In these regressions and in subsequent regressions, the explanatory variables include a coupon redemption dummy, the number of times the customer visited the online grocer's website in the course of placing an order, the number of days between the first and last visits the customer made to the grocer's website in the course of placing an order, an interaction between the coupon redemption dummy and the number of website visits during an order, an interaction between the coupon redemption dummy and the days between the first and last visits to the grocer's website during an order, the number of

days since a customer last received a grocery delivery as well as the square and cube of this term, the number of days between when the customer's order was placed and when it was delivered, the number of days since the customer's first order with the online grocer, the number of orders placed by the customer year to date, dummies for the day of the week when the order was placed, dummies for the day of the week when the order was delivered, dummies for each week in 2005, and customer fixed effects. The two variables that are interacted with the coupon redemption dummy were normalized before being included in these regressions.

We include the aforementioned control variables in our regressions to account for factors other than coupon redemption that may affect online grocery spending. However, when we drop all control variables except customer fixed effects from our regression specifications, the coefficient on the coupon redemption dummy remains statistically different from zero at the 5% level or lower in all of our analyses, and our results are even somewhat strengthened.

The two interaction terms included in our regression specifications allow us to examine some of the more nuanced ways in which coupon use influences spending. If a customer receives a \$10-off coupon after having filled most of her online grocery basket, the coupon might not have a large impact on her spending since she did not know about the coupon when selecting many of her groceries. On the other hand, if a customer receives a \$10-off coupon before filling her online grocery basket, the coupon may have a stronger influence on her choices, perhaps inducing her to substitute expensive, high-quality items for lower-quality ones. The two interaction

terms allow for these possibilities to emerge from our regression results because the number of times a customer visited the online grocer's website in the course of placing an order and the number of days between the first and last visits the customer made to the grocer's website in the course of placing an order are both negatively related to the likelihood that the customer received the \$10-off coupon before selecting most of the items in her online grocery basket.²⁰

The coefficient estimate on the coupon redemption dummy in regression (2) of Table 2.3 indicates that holding all else constant, the dollar size of a grocery order increases by approximately 1.3 percent when a customer redeems a \$10-off discount coupon. Regression (1) indicates that this effect corresponds to \$1.59 in additional spending. The results presented in Table 2.3 support the hypothesis that customers spend small windfalls when they are obtained rather than dividing their use of this additional wealth over the course of a lifetime.

The results also indicate that if the number of trips a customer makes to modify her grocery order online is one standard deviation below its mean value of 3.88, the effect of redeeming a coupon on spending is increased by 1.5 percentage points (or \$2.13). This pattern may be due to the fact that the fewer times a customer visits her online grocery basket, the higher the odds are that she makes the majority of her purchasing decisions while thinking about her coupon. However, it is important to note that the coefficient on the interaction between our coupon dummy and the

²⁰ Excluding the two interaction terms from our regression specifications does not meaningfully alter the results, although the statistical significance of the coefficient on the coupon redemption dummy is somewhat weakened in regression (1).

variable indicating how many times a customer returned to her online grocery basket is mostly identified off of the cross section in our data set rather than within person, so this result may be due to customer-level heterogeneity in shopping habits that is correlated with heterogeneity in customer responsiveness to coupons.

Table 2.3
THE EFFECT OF COUPONS ON SPENDING: MAIN RESULTS

	Spending in Dollars (1)	Log(1+Spending in Dollars) (2)
Coupon Used	1.59** (0.79)	0.0129** (0.0052)
Number of Web Visits for Order (Standardized)	7.57*** (0.39)	0.0515*** (0.0025)
Days btw First and Last Web Visits for Order (Standardized)	-2.24*** (0.43)	-0.0164*** (0.0032)
Coupon Used x Number Web Visits	-2.13*** (0.73)	-0.0152*** (0.0046)
Coupon Used x Days btw First and Last Web Visits	0.62 (0.70)	0.0050 (0.0049)
Days Since Last Delivery	0.85*** (0.06)	0.0056*** (0.0004)
(Days Since Last Delivery)² ÷100	-0.82*** (0.07)	-0.0055*** (0.0005)
(Days Since Last Delivery)³ ÷10,000	0.20*** (0.02)	0.0014*** (0.0015)
Days btw Order and Delivery	0.32* (0.20)	0.0014 (0.0013)
Days Since First Order with Grocer	0.07** (0.03)	0.0005** (0.0002)
Orders Year to Date	-0.05 (0.08)	-0.0004 (0.0005)
Day of the Week Order Placed Dummies	Yes	Yes
Day of the Week Order Delivered Dummies	Yes	Yes
Week of the Year Dummies	Yes	Yes
Customer Fixed Effects	Yes	Yes
Observations	34,410	34,410
Customers	2,889	2,889
Coupons	3,110	3,110
R²	0.63	0.63

Columns (1) and (2) report OLS coefficients from regressions of customer spending and the logarithm of one plus spending on a dummy indicating whether an order involved the redemption of a \$10-off discount coupon, controlling for the other variables listed. Standard errors (in parentheses) are clustered by customer. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

B. Do Customers Increase Their Spending on “Marginal” Goods When Redeeming a \$10-Off Coupon?

The theory of mental accounting suggests that when redeeming a \$10-off coupon, online grocery shoppers will purchase “marginal” groceries, or items that they would not purchase otherwise. If individuals have heterogeneous preferences, one way to test this hypothesis empirically is to examine whether people redeeming coupons spend more money than usual on items they never purchased before and will never purchase again in our data set.²¹ In Table 2.4 we present the results of two regressions estimating the relationship between coupon redemption and the amount a customer spends on groceries that were not included in her other orders. On average, customers spend \$39.24 per order on groceries they have not purchased before and will not purchase again in our data set. The coefficient estimate on the coupon redemption dummy in regression (4) of Table 2.4 indicates that holding all else constant, spending on these groceries increases by approximately 4.9 percent when a customer redeems a \$10-off coupon. Regression (3) indicates that this effect corresponds to \$1.56 in additional spending on these groceries. These results are consistent with our hypothesis that people purchase “marginal” items when they receive a \$10 windfall.

²¹ When we calculate how much money customers spend during an order on groceries they have not ordered before and will not order again, our data set does not include customers’ first orders of 2005, orders involving the redemption of other coupons, or orders that were eliminated because they were spending or web visit outliers. In creating this “marginal spending” variable, we intend to capture spending on groceries that a customer would not purchase under typical ordering conditions, so our calculations rely only on orders in our trimmed, final data set.

Table 2.4
THE EFFECT OF COUPONS ON SPENDING ON "MARGINAL" GROCERIES

	Spending on "Marginal" Groceries (3)	Log(1+Spending on "Marginal" Groceries) (4)
Coupon Used	1.56*** (0.52)	0.0485*** (0.0139)
Number of Web Visits for Order (Standardized)	4.80*** (0.22)	0.1644*** (0.0072)
Days btw First and Last Web Visits for Order (Standardized)	-0.93*** (0.25)	-0.0485*** (0.0087)
Coupon Used x Number Web Visits	-0.59 (0.51)	-0.0473*** (0.0110)
Coupon Used x Days btw First and Last Web Visits	0.29 (0.53)	0.0102 (0.0108)
Days Since Last Delivery	0.03 (0.03)	0.0028*** (0.0010)
(Days Since Last Delivery)² ÷100	0.05 (0.04)	-0.0002 (0.0011)
(Days Since Last Delivery)³ ÷10,000	-0.03* (0.14)	-0.0002 (0.0030)
Days btw Order and Delivery	0.12 (0.10)	-0.0008 (0.0034)
Days Since First Order with Grocer	0.03** (0.01)	0.0002 (0.0005)
Orders Year to Date	-0.14*** (0.04)	0.0006 (0.0018)
Day of the Week Order Placed Dummies	Yes	Yes
Day of the Week Order Delivered Dummies	Yes	Yes
Week of the Year Dummies	Yes	Yes
Customer Fixed Effects	Yes	Yes
Observations	34,410	34,410
Customers	2,889	2,889
Coupons	3,110	3,110
R²	0.65	0.56

Columns (3) and (4) report OLS coefficients from regressions of customer spending on "marginal" groceries and the logarithm of one plus spending on "marginal" groceries on a dummy indicating whether an order involved the redemption of a \$10-off discount coupon, controlling for the other variables listed. "Marginal" groceries are defined as items that a customer has not purchased before and will not purchase again in an order included in our data set. Standard errors (in parentheses) are clustered by customer. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

In order to paint a clearer picture of the types of items that absorb the additional \$1.59 in grocery spending associated with the redemption a \$10-off coupon, we examine how redeeming a coupon affects spending on each of the 112

grocery categories in our data set. Groceries in our data set have all been classified by our online grocer into one of 112 categories (e.g., Frozen Vegetables, Cream, Cosmetics, Cookies, etc.). We run 112 regressions in which the outcome variable in a given regression is spending on one category of groceries and 112 regressions in which the outcome variable in a given regression is the logarithm of one plus spending on one category of groceries. The primary predictor in all of these regressions is a coupon redemption dummy, and the same controls are included as in regressions (1) through (4). For each set of 112 regressions, Table 2.5 lists the five categories with the most positive coefficient estimates for the coupon redemption dummy and the five categories with the most negative coefficient estimates for the coupon redemption dummy. Casual inspection suggests that the grocery categories with the most positive coefficient estimates are relatively luxurious (e.g., Produce-Fruits, Meat-Fresh, Seafood-Frozen, Produce-Vegetables), particularly when compared to those categories with the most negative coefficient estimates (e.g., Baby Food, Dish Care, Household Cleaners, Pasta/Grains), which seem more like necessities. However, these results are merely suggestive.

Table 2.5

THE EFFECT OF COUPONS ON SPENDING AT THE GROCERY CATEGORY LEVEL, SORTED BY EFFECT SIZE					
Spending Regressions					
Five Categories with the Largest Coefficient Estimates			Five Categories with the Smallest Coefficient Estimates		
Category Name	Coefficient on Coupon Use Dummy	Std. Err.	Category Name	Coefficient on Coupon Use Dummy	Std. Err.
PRODUCE-FRUITS	0.32***	0.13	BABY FOOD	-0.21***	0.09
MEAT-FRESH	0.26	0.20	HOUSEHOLD CLEANERS	-0.14**	0.07
PRODUCE-VEGETABLES	0.18	0.14	PASTA/GRAINS	-0.11*	0.06
SEAFOOD-FROZEN	0.16**	0.08	FROZEN SNACKS/APPETIZERS	-0.10**	0.05
LAUNDRY CARE	0.12	0.09	SPICES/EXTRACTS	-0.08***	0.04
Log(1+Spending) Regressions					
Five Categories with the Largest Coefficient Estimates			Five Categories with the Smallest Coefficient Estimates		
Category Name	Coefficient on Coupon Use Dummy	Std. Err.	Category Name	Coefficient on Coupon Use Dummy	Std. Err.
SEAFOOD-FROZEN	0.0376***	0.0147	HOUSEHOLD CLEANERS	-0.0269*	0.0150
LAUNDRY CARE	0.0313*	0.0185	DISH CARE	-0.0239	0.0353
PRODUCE-FRUITS	0.0294*	0.0152	FROZEN SNACKS/APPETIZERS	-0.0229**	0.0116
MEAT-FRESH	0.0257	0.0213	FROZEN DINNERS/ENTREES	-0.0144	0.0187
DELI-PACKAGED	0.0249	0.0188	BABY FOOD	-0.0142	0.0110

For each grocery category, we performed a regression of customer spending on the category and a regression of the logarithm of one plus customer spending on the category on a dummy indicating whether an order involved the redemption of a \$10-off discount coupon, controlling for the other variables listed in regressions (1) through (4). We then sorted each set of 112 regressions according to the size of the coefficient on the coupon dummy variable. This table reports the top five and bottom five categories from each set of 112 regressions, as well as the associated coupon dummy coefficient estimates and standard errors. Standard errors are clustered by customer. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

C. Robustness of Results

The first robustness issue we address is a potential feedback problem in our primary regression analyses. We have estimated the effect of coupon redemptions on grocery spending using a regression with customer fixed effects. The consistency of our estimates relies on the “strict exogeneity” assumption – that the error term in equation (1) (see Section 3.C) has an expectation of zero conditional on the unobserved, customer-specific effect and the right-hand side variables for all of the customer’s orders.

Mathematically, this assumption can be expressed as:

$$E(\varepsilon_{it} | \alpha_i, coupon_used_{i1}, \dots, coupon_used_{iT}, X_{i1}, \dots, X_{iT}) = 0.$$

However, this assumption may be invalid because of feedback effects in some of the variables in X_{it} . For instance, if customer i places a large grocery order because of a high realization of ε_{it} , she may not need to return to the online grocer in the near future.

Therefore, ε_{it} may be correlated with the $t + 1$ values of the variables days since last delivery, days since last delivery squared, days since last delivery cubed, and days since first order with grocer. Under some assumptions, the inconsistency due to the violation of strict exogeneity is less severe for panel data sets with a large time series dimension. Because our data set has a relatively large time series dimension, we have presented fixed effects regression results despite the potential feedback problem. However, we can also conduct our analysis under the less restrictive assumption of “sequential exogeneity”:

$$E(\varepsilon_{it} | \alpha_i, coupon_used_{i1}, \dots, coupon_used_{it}, X_{i1}, \dots, X_{it}) = 0.$$

This assumption may hold even in the presence of the feedback effects discussed above. Instead of using a fixed effects regression to estimate equation (1), we estimate the equation in first differences,

$$\Delta spending_{it} = \gamma \cdot \Delta coupon_used_{it} + \theta' \Delta X_{it} + \Delta \varepsilon_{it}, \quad (2)$$

using a pooled OLS regression. We use the first lags of the variables with potential feedback problems as instruments for the first differences of these variables, and the standard errors are clustered by customer. The estimates of γ from these first-difference regressions that correspond to the fixed effects regressions (1)-(4) are still statistically significant (although the coefficient corresponding to regression (1) is only significant at the 10% level), and they are slightly larger in magnitude.²²

The second issue we address is the implication of dropping orders from our data set when they involved the redemption of coupons besides the \$10-off coupons we are studying. As discussed in Section 3.B, many of these other types of coupons could only be redeemed on orders that met certain requirements. For example, one common condition for coupon redemption was that the size of a customer's order exceed a minimum dollar threshold (the minimum dollar threshold for using such coupons was higher than the threshold that applied to all other orders). The \$10-off coupons we are studying had no such elevated minimum spending requirement. In order to avoid confounding the interpretation of our results, our data set does not include any orders involving the redemption of coupons other than the \$10-off coupons. Of course, it is

²² Our discussion of the concepts and techniques in this paragraph is derived entirely from Wooldridge (2002).

possible that eliminating these observations biased our results in favor of supporting the mental accounting hypothesis by removing large orders that did not involve \$10-off coupons from our data set. To check the robustness of our results, we restore the orders that involved other types of coupons to our data set, and we treat them as if they were not associated with any type of coupon. When we repeat our analysis of the impact of a \$10-off coupon on total spending with this altered data set, our main results in regressions (1) and (2) are actually strengthened, both in terms of statistical significance and in terms of effect size.

The third issue we discuss is the implication of the reduced cost of ordering groceries for delivery that is induced by the receipt of a \$10-off coupon. Although the \$10-off coupon we are studying does not change the relative prices of groceries available from the online grocer, it does reduce the price per order of having groceries delivered, which is a potential concern. Customers may respond to the reduced price per order by increasing the frequency of their orders from the online grocer. Of course, we would expect an increase in ordering frequency to decrease the dollar size of individual grocery orders. If a customer purchases the same total number of groceries but distributes those groceries across more orders, her orders will become smaller. Similarly, if a customer increasingly uses online grocery shopping as a substitute for trips to purchase a few items at, say, a small convenience market, additional online orders are likely to be smaller in size. This potential bias should reduce the likelihood of finding evidence consistent with the mental accounting hypotheses we test.

D. Alternative Interpretations

The first alternative explanation for our findings that we address is the possibility that there are certain times when a customer is better able to plan her future food consumption and also more likely to redeem a \$10-off coupon. When customers are in this “planning mode,” they may have larger grocery orders and longer lags between grocery orders, and they may be more prone to redeem a \$10-off coupon. In order to test the plausibility of this explanation, we run two regressions, which are presented in Table 2.6. In regression (5), the outcome variable is the number of days between the current online grocery delivery and the previous delivery, and in regression (6) it is the logarithm of this value. The explanatory variables are an indicator for whether a \$10-off coupon was used on the previous grocery order, an indicator for whether a \$10-off coupon was used on the current grocery order, and all of the control variables from the previous regressions except the following: the interaction between the coupon redemption dummy and the number of website visits during the order, the interaction between the coupon redemption dummy and the number of days between the first and last visits to the grocer’s website during the order, the number of days since the customer’s previous grocery delivery (and the square and cube of this term), and the number of days since the customer’s first online grocery order.²³ The coefficient on the indicator for whether a \$10-off coupon was used on the previous grocery order is positive but not statistically significant. Thus, coupon redemption appears to result in larger grocery orders without significantly reducing the rate at which customers return to the online grocer for their

²³ We exclude the interaction terms from the regressions because they no longer have an interesting interpretation, and we exclude the variables having to do with the number of days since a prior order since they are so similar to (if not identical to) the outcome variables in the regressions.

next order. This result neither confirms nor rules out the proposed alternative explanation. However, in order to be viable, the “planning mode” explanation must also rationalize the evidence that coupon redemption is associated with increased spending on particular types of grocery items. Spending increases are often focused on perishable foods (see Table 2.5), and it is not clear that planning for the future should increase purchases of foods that are probably intended for relatively immediate consumption.

Table 2.6
THE EFFECT OF COUPONS ON ORDER FREQUENCY

	Days Since Last Delivery	Log(Days Since Last Delivery)
	(5)	(6)
Coupon Used on Last Order	0.58 (0.47)	0.0093 (0.0142)
Coupon Used on This Order	0.92** (0.39)	0.0390*** (0.0115)
Number of Web Visits for Order (Standardized)	-1.24*** (0.21)	0.0041 (0.0072)
Days btw First and Last Web Visits for Order (Standardized)	12.38*** (0.69)	0.2841*** (0.0207)
Days btw Order and Delivery	0.31*** (0.05)	0.0315*** (0.0022)
Orders Year to Date	-0.63*** (0.05)	-0.0180*** (0.0015)
Day of the Week Order Placed Dummies	Yes	Yes
Day of the Week Order Delivered Dummies	Yes	Yes
Week of the Year Dummies	Yes	Yes
Customer Fixed Effects	Yes	Yes
Observations	34,410	34,410
Customers	2,889	2,889
Coupons	3,110	3,110
R²	0.67	0.62

Columns (5) and (6) report OLS coefficients from regressions of days since a customer's last grocery delivery and the logarithm of days since a customer's last grocery delivery on a dummy indicating whether the customer's previous order involved the redemption of a \$10-off discount coupon, controlling for the other variables listed. Standard errors (in parentheses) are clustered by customer. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Modified versions of the permanent income or lifecycle theory provide another potential interpretation of our results. Although our results are inconsistent with the

standard theory, adding liquidity constraints to the standard model can give agents a high propensity to consume out of windfalls (Zeldes, 1989; Deaton, 1991; Deaton, 1992). Judging from the demographic characteristics of online grocery shoppers, it does not seem likely that the consumers in our data set are liquidity constrained, but we cannot rule out this possibility or related explanations for our findings.

Finally, our discussion assumes that the increases in grocery spending we observe when consumers redeem \$10-off coupons are not offset by spending reductions in other domains. While this assumption seems reasonable, we ultimately cannot verify it because we observe only the online grocery expenditures of the customers in our data set.

5. Conclusion

In this paper, we present evidence indicating that the redemption of a \$10-off coupon increases an individual's spending in the domain of online groceries, as predicted by the theory of mental accounting. We also find evidence, consistent with the theory of mental accounting, that the increase in spending stimulated by the redemption of a \$10-off coupon is focused on groceries that customers would not purchase in the absence of such a coupon ("marginal" goods). Our analysis uses a novel panel data set, which allows us to observe precisely what goods consumers purchase following the receipt of a windfall. In addition, our study focuses on windfalls that are considerably smaller than those examined in past field studies. Although the types of decisions analyzed in this paper involve small stakes, the cumulative effect of many small-stakes decisions may be significant. Examining the aggregate impact of small-stakes decisions driven by mental accounting may therefore be an interesting topic for future research.

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PAPER 3:

Unsure What the Future Will Bring? You May Overindulge:

Uncertainty Increases the Appeal of *Wants* over *Shoulds*

AUTHOR'S NOTE: I thank M. Bazerman, J. Beshears, H. Kunreuther, K. Kassam, J. Matthews, V. Schneider, K. McGinn, D. Parkes, D. Laibson, HBS, Wyss, and seminar participants at London Business School, the University of Southern California and the Ohio State University.

1. Introduction

Often in our lives we face uncertainty about what the future will bring. Will our stock market portfolio move up or down tomorrow? Will our boss assign us to work on project A or project B? Previous research has shown that when our ability to reason through choices in a cool, deliberate manner is weakened, the likelihood that we will reach for *wants* (e.g., junk foods and lowbrow films) over *shoulds* (e.g., healthy foods and highbrow films) increases (Muraven and Baumeister, 2000; Shiv and Fedorkhin, 1999). This paper provides evidence that uncertainty in our environment increases our tendency to engage in indulgences.

To explain why certain circumstances systematically shift whether individuals favor *wants* or *shoulds*, it has been proposed that individuals employ dual systems for decision making (Thaler and Shefrin, 1981; Schelling, 1984; Bazerman, Tenbrunsel and Wade-Benzoni, 1998; Metcalfe and Mischel, 1999; Shiv and Fedorikhin, 1999) – a hot, affective, impulsive system (the *want* self) and a cool, cognitive, controlled system (the *should* self). According to this theory, situations that trigger affective desires (Loewenstein, 1996) or reduce cognitive resources (Muraven and Baumeister, 2000) increase the likelihood that people will make *want* choices, whereas situations that weaken impulses or strengthen cognitive systems increase the likelihood that people will make *should* choices. Factors that have been demonstrated to increase the rate at which individuals favor *wants* over *shoulds* by weakening analytical resources include cognitive load (Shiv and Fedorkhin, 1999) and depleted self-control (Baumeister, Bratslavsky, Muraven, and Tice, 1998; Muraven, Tice, and Baumeister, 1998).

This paper examines how uncertainty affects whether people make *want* or *should* choices. Research by Tversky and Shafir (1992) first demonstrated that when people would prefer an option A to an option B given any of the possible outcomes of an uncertain event, they will not necessarily select option A before their uncertainty is resolved. Tversky and Shafir propose that in the face of uncertainty, decision makers have difficulty reasoning through their choices, and this complexity systematically alters their selections. They find that people will actually pay to defer a choice in the face of uncertainty – preferring inaction to action – even when they would make the same choice regardless of the outcome that is uncertain.

Combining this evidence with the dual systems theory of *want/should* conflict leads to the prediction that uncertainty in one's environment will produce an increased preference for *wants*. Assuming uncertainty in a decision environment increases the complexity of the choice an individual must make, uncertainty would be expected to weaken the cognitive *should* self, leading to increased take-up of *wants*. Additional support for this prediction comes from the finding that uncertainty leads individuals to favor inaction over action (Tversky and Shafir, 1992). Muraven and Baumeister (2000) argue that the engagement of willpower, or the *should* self, requires an active process, again suggesting that uncertainty will increase take-up of *wants*.

The three studies presented in this paper address the hypothesis that uncertainty about the future increases the rate at which individuals choose *wants* over *shoulds*. Study 3 also examines whether the effects of uncertainty are dependent on the types of uncertain outcomes individuals face.

2. Study 1

A. Method

PARTICIPANTS

227 participants were recruited on a college campus in exchange for small prizes.

PROCEDURE

Participants were asked to imagine that their roommate was setting them up on a blind date with a co-worker. Whichever of two of their roommate's co-workers was available would take the participant to the movies. Profiles describing the two possible dates were provided (see Figure 3.1 and Appendix A). Participants were instructed to choose a date movie. The options were described as "a documentary about a fairly esoteric topic that has been called 'a bit dull but highly educational and enlightening' or an action film with attractive movie stars that has been called 'empty but highly entertaining'." Participants were told "You feel conflicted because you think you *should* see the documentary but you really *want* to see the action film."

<u>Possibility #1: Devon</u>	<u>Possibility #2: Addison</u>
<i>Style:</i> Preppy <i>Hair:</i> Brown, Straight <i>Eyes:</i> Brown <i>Attractiveness Rating (1-10 scale):</i> 6 <i>Fun to Be Around Rating (1-10 scale):</i> 9 <i>Home:</i> Small town on the West Coast <i>Education:</i> Law Degree <i>Interests:</i> Politics, Sports, Travel	<i>Style:</i> Scholarly <i>Hair:</i> Red, Curly <i>Eyes:</i> Blue <i>Attractiveness Rating (1-10 scale):</i> 7 <i>Fun to Be Around Rating (1-10 scale):</i> 5 <i>Home:</i> Big city on the East Coast <i>Education:</i> Ph.D. in Philosophy <i>Interests:</i> Theories of Religion, Antiques
Figure 3.1. Description of possible dates (with gender neutral names) provided to participants. Participants were told the chances were 50% that Devon would be available and 50% that Addison would be available.	

One third of participants were told that their date would be with Devon and asked to choose their date movie. One third of participants were told that their date would be

with Addison and asked to choose their date movie. A final third of participants were told the odds were 50% that they would go out with Devon and 50% that they would go out with Addison but that they would have to choose their date movie before the resolution of this uncertainty.²⁴

B. Results

As predicted, participants facing uncertainty about their date's identity were significantly more likely to choose the action (*want*) film over the documentary (*should*) film (81%) than those who were certain of their date's identity (*Devon condition* – 50%, test of equality of proportions, $z = 4.01$, $p < 0.001$; *Addison condition* – 61%, test of equality of proportions, $z = 2.69$, $p < 0.01$). The studies below address the concern that Addison's and Devon's peculiarities drive the finding that uncertainty increases the attractiveness of *want* options.

3. Study 2

Study 2 examines whether the findings from Study 1 replicate with different stimuli.

A. Method

PARTICIPANTS

175 participants were recruited on two college campuses in exchange for small prizes.

PROCEDURE

²⁴ This design replicates that used by Tversky and Shafir (1992).

Participants were asked to imagine that their roommate would pick up pizza for dinner from their favorite pizza place, which only makes one type of pie each night. The pizza would either be carne asada pizza or pesto chicken pizza (for descriptions provided, see Figure 3.2 and Appendix B). Participants were told to choose a dessert so their roommate could pick that up as well. The options were fresh fruit salad or brownies, and participants were told “You are trying to lose weight, so you know you probably *should* choose the fresh fruit salad, but fresh brownies are what you viscerally *want*.”

	<p><u>Possibility #1: Carne Asada Pizza</u></p> <p>Grilled steak, fire-roasted mild chilies, onions, cilantro pesto, Monterey Jack, and Mozzarella cheeses. Topped with fresh tomato salsa and cilantro. Served with a side of tomatillo salsa.</p>
	<p><u>Possibility #2: Pesto Chicken Pizza</u></p> <p>NEAPOLITAN PIZZA: Grilled chicken breast marinated in a basil pesto sauce with mild onions, Mozzarella cheese, sun-dried tomatoes, pesto sauce and toasted pine nuts.</p>
<p>Figure 3.2. Description of possible pizzas shown to participants. Participants were told the chances were 50% that the available pizza would be carne asada and 50% that it would be pesto chicken.</p>	

One third of participants were told that the available pizza would be carne asada pizza and asked to choose a dessert. One third of participants were told that the available pizza would be pesto chicken pizza and asked to choose a dessert. A final third of participants were told the odds were 50% that the available pizza would be carne asada

and 50% that it would be pesto chicken pizza but that they would have to choose a dessert before the resolution of this uncertainty.

B. Results

As predicted, participants facing uncertainty about the type of pizza they would eat were significantly more likely to choose brownies (the *want* dessert) over fruit salad (the *should* dessert) (82%) than those who were certain of the type of pizza available (*carne asada condition* – 58%, test of equality of proportions, $z = 2.81$, $p < 0.01$; *pesto chicken condition* – 59%, test of equality of proportions, $z = 2.71$, $p < 0.01$). This finding lends additional support to the conclusion of Study 1 that uncertainty increases the probability that individuals will select *wants* over *shoulds*.

However, there is an alternative explanation for the finding in this study and in Study 1 besides the account that the presence of uncertainty makes *wants* more appealing. If some people would prefer a *want* paired with one outcome but a *should* paired with the other, then the results of these two studies could be driven by people with split preferences who, in the face of uncertainty, prefer to assure themselves of a *want* rather than risk receiving a *should* without its appropriate complement. For example, carne asada pizza lovers might find fruit salad tolerable when paired with their favorite pizza but choose brownies if pesto chicken pizza were on offer. Facing an uncertain pizza dinner, people with such preferences might systematically “hedge” by guaranteeing themselves at least one indulgence (selecting brownies), perhaps due to regret aversion (Loomes and Sugden 1982).

4. Study 3

Study 3 examines whether the findings of Studies 1 and 2 persist when individuals make real rather than hypothetical choices. Study 3 also attempts to replicate the findings of Studies 1 and 2 in a context where the alternative “hedging” explanation could not account for increased take-up of *wants* in the face of uncertainty. The new feature of Study 3 designed to rule out the possibility of hedging is that participants facing uncertainty were invited to make choices between *want* and *should* options *contingent* upon the outcome of the uncertain event.

Study 3 extends Studies 1 and 2 by examining whether the types of options an individual faces uncertainty over (e.g., two similar or two different options on the *want/should* spectrum) affect whether uncertainty leads to increased take-up of *wants*. Facing uncertainty about similar outcomes should increase how difficult it is for a decision maker to reason through a decision tree by reducing the ease with which different, distinct outcomes can be imagined and evaluated (March and Simon, 1958). Thus, the effects of uncertainty are hypothesized to be enhanced when this additional strain is placed on the cognitive resources of the *should* self and reduced when decision makers face uncertainty pertaining to distinct outcomes.

A. Method

PARTICIPANTS

31 students were paid \$40 for their participation in this two day study.

PROCEDURE

On the first day of this study, participants were told that on the following day, they would spend one hour watching a television show assigned by the experimenter

while eating a snack of their choice – either an apple or a package of M&Ms. In the *certainty condition*, participants were told which television show they would watch tomorrow as well as the title of another show from the available library that they would not be watching. In the *uncertainty condition*, participants were told the names of two television shows they might watch tomorrow and informed that a coin toss tomorrow would determine which show they would actually see. In both conditions, the two shows were randomly selected from the set of 136 hour-long television programs with episodes available for free viewing on www.hulu.com as of October 2008.²⁵ Participants in both conditions were also randomly assigned to either see descriptions of two shows that were deemed similar on the *want/should* spectrum or two shows that were deemed extreme opposites on that spectrum.²⁶

After learning what show(s) they would either potentially or definitely see tomorrow, participants were prompted to make a binding choice about what snack to eat while watching television (an apple or M&Ms). Participants in the *uncertainty condition* were prompted to make their snack choices contingent upon the outcome of tomorrow's coin toss. In other words, participants selected what snack they would eat if the first of the two television shows they might watch were randomly selected tomorrow and also what snack they would eat if the second of those two shows were randomly selected. Snack choices could be identical or different for the two shows depending on the participant's preferences. See Appendix D for materials.

B. Results

²⁵ "Hulu – Watch your favorites. Anytime. For free." www.hulu.com. Accessed October 24, 2008.

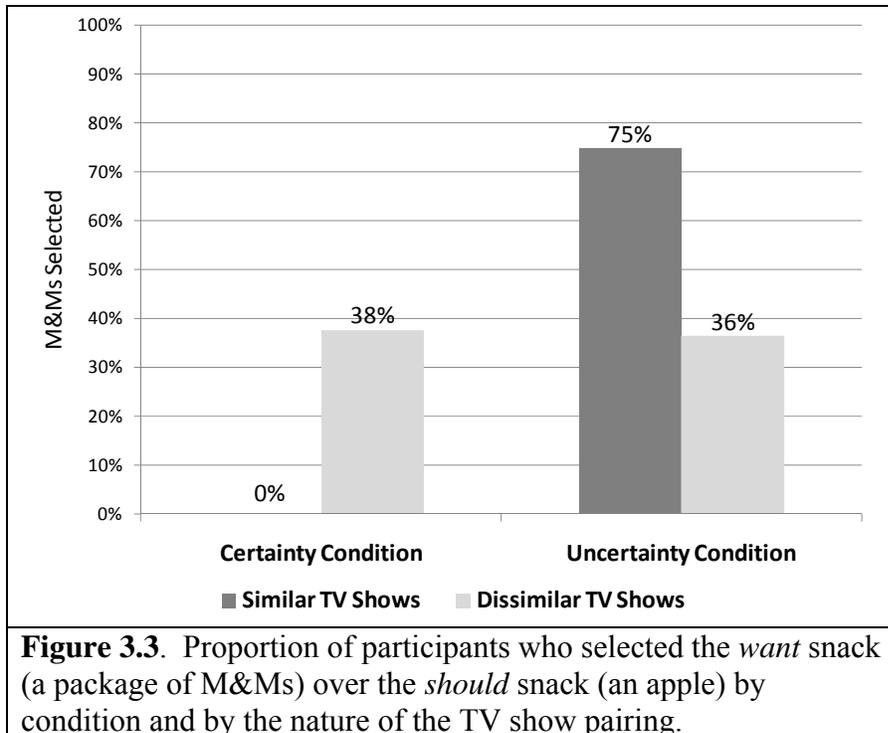
²⁶ *Want/should* ratings were provided by two research assistants. See Appendix C for details.

As expected, participants facing uncertainty about the television show they would watch tomorrow were significantly more likely to choose the M&Ms (the *want* snack) over the apple (the *should* snack) (63%)²⁷ than those who were certain of the show they would be watching (27%) (test of equality of proportions, $z = 2.00$, $p < 0.05$).²⁸ This finding lends additional support to the hypothesis that uncertainty increases the probability that individuals will select *wants* over *shoulds*.

As illustrated in Figure 3.3, this effect was driven by participants who faced uncertainty about which of two *similar* shows they would watch tomorrow. In a logistic regression conducted to predict M&Ms selection, including an indicator of whether a participant was in the uncertainty condition (1) or not (0), an indicator of whether a participant saw two similar television shows (1) or not (0), and an interaction between these variables, where robust standard errors were clustered at the individual level to account for repeated choices by the same individual in the *uncertainty condition*, the interaction term was highly significant ($z = 21.04$, $p < 0.01$).

²⁷ This percentage is the average rate of M&Ms selection across the two (contingent) choices made by participants in the *uncertainty condition*.

²⁸ Including both choices made by each participant in the *uncertainty condition* in a logistic regression to predict M&M selection with clustered standard errors to account for repeated observations of the same individual yields the same significant result ($z = -2.04$, $p < 0.05$).



5. Discussion

The results presented above suggest that uncertainty can have dramatic effects on choice, contradicting the “sure thing principle” of economic theory (Savage 1954). Specifically, they demonstrate that individuals are more likely to select *want* options when they face uncertainty about the future, suggesting that eliminating uncertainty from situations involving decision making may have meaningful “halo effects”. In addition, the increase in *want* selections driven by uncertainty is most extreme when individuals face uncertainty about similar outcomes, whose likeness presumably reduces the ease with which a decision maker can evaluate the possibilities she faces.

These findings have important policy implications. Research suggesting ways in which people may be “nudged” (Thaler and Sunstein, 2008) to make more *should*

decisions can help policy makers design interventions that will help individuals save more for retirement, eat more healthfully, and generally engage in fewer behaviors that are costly to society. This paper documents a previously unknown lever – uncertainty about the conditions under which an option will be consumed – that leads to systematic changes in whether people select *shoulds* or *wants*.

The results presented in this paper are consistent with the dual systems theory of *want/should* conflict, which predicts that factors in the environment that make it more difficult to call upon the cognitive *should* self to reason through choices will increase take-up of *wants*. However, these results contradict previous research arguing that self-control dilemmas and *want/should* conflict can be explained by construal level theory (CLT) (Kivetz and Tyler, 2007; Fujita, Trope, Liberman, and Levin-Sagi, 2006).

Research on CLT has associated situational factors that lead to higher-level, abstract construal of a choice with increased take-up of *shoulds* (Fujita et al., 2006; Rogers and Bazerman, 2008; Kivetz and Tyler, 2007) as well as demonstrating that uncertain situations lead individuals to construe choices at a higher-level (Trope, Liberman and Wakslak, 2007; Wakslak, Trope, Liberman, Alony, 2006). Thus, CLT incorrectly predicts that uncertainty will increase take-up of *shoulds*. Our findings therefore suggest that a dual systems theory may be a more appropriate lens than CLT for predicting and explaining the causes and consequences of *want/should* conflict.

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Appendix A

Your roommate is worried that you haven't been dating lately and that you're in a romantic slump. As a result, your roommate has insisted on setting you up on a blind date for tonight. You know there are two possible candidates for this date – two of your roommate's colleagues who have both expressed an interest in you. Who you go out with depends on which of these people draws the short straw and has to work overtime tonight – the chances are 50% that one of them will end up working late and be unable to go out with you and 50% that it will be the other one. Your roommate has sent you the following profiles of her two co-workers:

Possibility #1: Devon

Style: Preppy

Hair: Brown, Straight

Eyes: Brown

Attractiveness Rating (1-10 scale): 6

Fun to Be Around Rating (1-10 scale): 9

Home: Small town on the West Coast

Education: Law Degree

Interests: Politics, Sports, Travel

Possibility #2: Addison

Style: Scholarly

Hair: Red, Curly

Eyes: Blue

Attractiveness Rating (1-10 scale): 7

Fun to Be Around Rating (1-10 scale): 5

Home: Big city on the East Coast

Education: Ph.D. in Philosophy

Interests: Theories of Religion, Antiques

You are in charge of choosing the film for the evening, and your roommate has told you that either of the movies you are considering will appeal to both co-workers. The options are a documentary about a fairly esoteric topic that has been called “a bit dull but highly educational and enlightening” or an action film with attractive movie stars that has been called “empty but highly entertaining”. You feel conflicted because you think you *should* see the documentary but you really *want* to see the action film. Your roommate is going to buy the movie tickets since the theater is right by her office and she wants to make sure they don't sell out before you arrive. She will give them to her co-worker, who you will meet at the theater tonight.

Devon Condition: {You find out that preppy Devon will be your date tonight.}

Addison Condition: {You find out that scholarly Addison will be your date tonight.}

Uncertainty Condition: {Although you are unsure of which of your roommate's co-workers you will spend the evening with, realizing there is a 50% chance that you will go out with preppy Devon and a 50% chance that you will go out with scholarly Addison, your roommate has asked you to tell her which movie tickets to buy for your upcoming date.}

Devon and Addison Conditions: {Your roommate wants to know what movie you want tickets to see?}

Uncertainty Condition: {Which movie do you tell her, still unsure of who your date will be, that she should buy tickets for?} [CIRCLE YOUR CHOICE BELOW]

(a) the documentary or (b) the action film

Appendix B

You have a big meeting today so your roommate has volunteered to pick up take-out pizza from your favorite pizza place for dinner tonight. Your favorite pizza place only makes one type of pizza each night, and it's always excellent. You've learned from experience that there is a 50% on Tuesdays (today is a Tuesday) that the available pizza will be a Carne Asada Pizza (see below for a detailed description) and a 50% chance that it will be a Pesto Chicken Pizza (see below for a detailed description).

	<p><u>Possibility #1: Carne Asada Pizza</u></p> <p>Grilled steak, fire-roasted mild chilies, onions, cilantro pesto, Monterey Jack, and Mozzarella cheeses. Topped with fresh tomato salsa and cilantro. Served with a side of tomatillo salsa.</p>
	<p><u>Possibility #2: Pesto Chicken Pizza</u></p> <p>NEAPOLITAN PIZZA: Grilled chicken breast marinated in a basil pesto sauce with mild onions, Mozzarella cheese, sundried tomatoes, pesto sauce and toasted pine nuts.</p>

Carne Asada Condition: {This morning your roommate called the restaurant and learned that the pizza available tonight would be Carne Asada Pizza.}

Pesto Chicken Condition: {This morning your roommate called the restaurant and learned that the pizza available tonight would be Pesto Chicken Pizza.}

Uncertainty Condition: {Tonight when you get home, you will find out which pizza you are eating – Carne Asada Pizza or Pesto Chicken Pizza.}

You are in charge of choosing what dessert to have with the pizza for dinner: (a) fresh fruit salad or (b) fresh brownies. You are trying to lose weight, so you know you probably *should* choose the fresh fruit salad, but fresh brownies are what you viscerally *want*.

Carne Asada Condition: {Your roommate has asked you to tell her which to buy for dessert after your Carne Asada Pizza dinner?}

Pesto Chicken Condition: {Your roommate has asked you to tell her which to buy for dessert after your Pesto Chicken Pizza dinner?}

Uncertainty Condition: {Although you are unsure of which pizza you will be eating tonight, realizing there is a 50% chance that you will have Carne Asada Pizza and a 50% chance that you will have Pesto Chicken Pizza, your roommate has asked you to tell her which dessert to buy for tonight?}

Which do you tell her, still unsure of the pizza you will be eating, that she should buy for dessert?} [CIRCLE YOUR CHOICE BELOW]

(a) fresh fruit salad or (b) fresh brownies

Appendix C

Two raters provided each television show with a *want* rating and a *should* rating on a 1 to 7 scale after reviewing definitions of these terms. To create a *should minus want* (*SMW*) rating for each show, *want* ratings were subtracted from *should* ratings (following Milkman, Rogers and Bazerman, in press). Across the 136 shows rated, *SMW* rater agreement was fair ($\alpha = 0.44$). Shows were divided into six equal-sized bins based on their average *SMW* scores. Participants either saw one show drawn randomly from the top (extreme *should*) bin and one show drawn from the bottom (extreme *want*) bin or two shows drawn randomly from the same bin.

Show Title	Description	Bin ²⁹
Lipstick Jungle	Lipstick Jungle is another hit novel by Sex and the City author Candace Bushnell. While Sex and the City followed the exploits of four single women looking for love in New York, Lipstick Jungle tracks three powerful career women who are willing to do almost anything for success in the business world: Wendy Healy (Brooke Shields), president of Parador Pictures, Victory Ford (Lindsay Price), a high profile fashion designer, and Nico Reilly (Kim Raver), editor-in-chief of a hot selling fashion magazine named Bonfire Magazine.	1
Monk	Former police detective Adrian Monk (Tony Shalhoub), whose photographic memory and amazing ability to piece together tiny clues made him a local legend, has suffered from intensified obsessive-compulsive disorder and a variety of phobias since the unsolved murder of his wife, Trudy, in 1997. Now on psychiatric leave from the San Francisco Police Department and working as a freelance...	1
My Own Worst Enemy	Edward Albright is a super spy. Henry Spivey is living the normal American dream in the suburbs with his wife, two kids and dog. The two men have one thing in common - they share the same body because Edward took part in an experiment several years earlier to create a split personality. Henry has never met his alter-ego Edward, except for an email he receives from Edward saying that people are coming to kill him. Now, the super spy and the suburban daddy have to learn to live with each other in the same body and not get each other killed.	1
The O.C.	The O.C. - also known as Orange County, California - is an idyllic paradise, a wealthy, harbor-front community where everything and everyone appears to be perfect. But beneath the surface is a world of shifting loyalties and identities, of kids living secret lives hidden from their parents and of parents living secret lives hidden from their children. 'The O.C.' tells the story of the Cohen, Cooper and Nichol families and Ryan Atwood, a troubled teen from the wrong side of the tracks who is thrust into this world and who will forever change the lives of the residents of The	1

²⁹ Bin 1 = extreme *wants*, Bin 6 = extreme *shoulds*

	O.C.	
Party of Five	Nothing could be worse than the sudden death of parents. One day Nick and Diana Salinger were killed in a terrible car crash, and left their five children all alone. Together, they go through all sorts of problems, from handling their parents restaurant and trying to keep it running to disastrous relationships and school problems. Soon they realize that in order to survive, no one can be selfish and they all have to help each other. They're a family and have to stick together.	1
Prison Break	After getting himself incarcerated in Fox River State Penitentiary to free his wrongly accused brother, Lincoln Burrows, Michael Scofield is now on the loose--along with his brother. Tasked by a government agent to take down The Company, the brothers work along side former correctional officer Brad Bellick, former federal agent Alexander Mahone and other odd characters.	1
Psych	Fake Psychic. Real Detectives. Shawn Spencer has developed a keen eye for detail after being instructed by his police officer father to note even the most minute details of his surroundings. After conning the police into believing that he's a psychic, Shawn opens a detective agency with best friend Burton Guster.	1
Studio 60 on the Sunset Strip	Look behind the scenes of Studio 60, a fictional sketch-comedy series on the NBS broadcast network. Problem is the series seems to be going down the tube fast. Everyone involved with the late-night dud seems to have one problem or another, including the current Executive Producer, who just had an on-air mental meltdown, and time is running out fast. Enter the network's Chairman of the Board (Steven Weber) and a new network president (Amanda Peet) looking to make her mark on the net. Her answer is move is to bring in a pair of fresh-faced writers (Matthew Perry and Bradley Whitford) to try and save the series. Will it work?	1
Terminator : The Sarah Conner Chronicles	After two years in one place Sarah decides they need a change of scenery and in doing so they expose themselves to FBI Agent James Ellison (Richard T. Jones) and Skynet's army of Terminators including Cameron Phillips (Summer Glau) a reprogrammed Terminator sent to protect John. She informs them that Judgment Day was not stopped and will take place in 2011. John convinces Sarah to stop hiding and fight so Cameron takes them to a time machine the resistance has set up to take them to the year Skynet was created 2007.	1
Angel	Joss Whedon, the creator and executive producer of the international hit series Buffy the Vampire Slayer, combines supernatural adventure and dark humor in this next chapter of the Buffy mythology. Just as Whedon and executive producer David Greenwalt brought the monsters of adolescence to life with Buffy, this one-hour series explores the twists and turns of early adulthood with the same irony and wit. A centuries-old vampire cursed with a conscience, Angel left the small California town of Sunnydale and the only woman he ever loved to take up residence in Los Angeles, the City of Angels. Between pervasive evil and countless temptations lurking beneath the city's glittery facade, L.A. has proven to be the ideal address for a fallen vampire looking to save a few lost souls and, in turn, perhaps redeem his own.	1
Buffy The Vampire Slayer	Buffy the Vampire Slayer is a comedy-action series that chronicles the adventures of Buffy Summers, a teenage girl who is gifted with the strength and skill to hunt vampires.	1
Charlie's Angels	Beautiful, intelligent and ultra-sophisticated, "Charlie's Angels" are everything a man could dream of...and way more than they could ever handle! Receiving their orders via speaker phone from their never seen boss, Charlie, the Angels employ their incomparable sleuthing and combat skills, as well as their lethal feminine charm, to crack even the most seemingly insurmountable of cases.	1
Chuck	Action-comedy series about Chuck Bartowski (Zachary Levi, "Less Than Perfect") -- a computer geek who is catapulted into a new career as the government's most vital secret agent. When Chuck opens an e-mail subliminally encoded with government	1

	secrets, he unwittingly downloads an entire server of sensitive data into his brain. Now, the fate of the world lies in the unlikely hands of a guy who works at a Buy More Electronics store.	
Fame	The New York City High School for the Performing Arts was their dream. They wanted to dance, to sing, to play music, and to act... but above all they want to live their lives while they are still young and full of energy.	1
Fringe	When an international flight lands at Boston's Logan Airport and the passengers and crew have all died grisly deaths, FBI Special Agent OLIVIA DUNHAM (newcomer Anna Torv) is called in to investigate. After her partner, Special Agent JOHN SCOTT (Mark Valley, "Boston Legal"), is nearly killed during the investigation, a desperate Olivia searches frantically for someone to help, leading her to DR. WALTER BISHOP (John Noble, "Lord of the Rings: Return of the King"), our generation's Einstein. There's only one catch: he's been institutionalized for the last 20 years, and the only way to question him requires pulling his estranged son PETER (Joshua Jackson, "Dawson's Creek") in to help. When Olivia's investigation leads her to manipulative corporate executive NINA SHARP (Blair Brown, "Altered States"), our unlikely trio along with fellow FBI Agents PHILLIP BROYLES (Lance Reddick, "The Wire"), CHARLIE FRANCIS (Kirk Acevedo, "Oz") and ASTRID FARNSWORTH (Jasika Nicole, "Law & Order: Criminal Intent") will discover that what happened on Flight 627 is only a small piece of a larger, more shocking truth.	1
Highlander	Highlander follows one Immortal, Duncan MacLeod of the Clan MacLeod (known as "The Highlander" to other Immortals). Duncan MacLeod, born 400 years ago in the Highlands of Scotland, is on an ongoing quest, since "In the End, There Can Be Only One."	1
Airwolf	Created by Donald P. Bellisario, who had already had such hits as 'Magnum p.i.' (1980-1988), 'Airwolf' followed the adventures of a hi-tech helicopter and it's reclusive pilot, Stringfellow Hawke.	2
Journeyma n	Kevin McKidd (Rome) stars as Dan Vassar in this new series from NBC set to air in the fall of 2007. Dan is happily married with a son. It seems like he has everything going for him. Dan ends up traveling into the past. He changes people's lives, sometimes for the better, but sometimes not. During his travels he meets up with Livia Beale, he was engaged to her when she died in a plane crash. Knowing the future he has a chance to save her but how will that change his own future?	2
Late Night with Conan O'Brian	Smart-alecky, ribald and whimsical, "Late Night with Conan O'Brien" rose to become a critical darling and dorm favorite after a rocky start in 1993. A distinct brand of humor, Late Night employs the use of various recurring characters (including Triumph the Insult Comic Dog, Vomiting Kermit, Eyeballs O'Shaughnessy, NASCAR-driving shotgun-toting Jesus, Masturbating Bear) and comedy bits.	2
Miami Vice	Miami Vice was one of the most innovative and powerful TV series of all time. Focusing on the Miami Metro-Dade Police "Vice" Department and it's continued battle against the illicit drug, prostitution, and firearms crime underworld of the city of Miami. It used fashion, color, and a varied musical selection in order to accentuate and amplify the emotional undercurrent of the drama it portrayed.	2
The Moment of truth	Sometimes when asked difficult personal questions, a little lie won't hurt. Unless you're on the game show The Moment of Truth, and your lie is detected by a lie detector test. Host Mark L. Walberg administers the questions already answered by contestants previous to the show's taping. The prize is \$500,000, but will it be worth it?	2
My Bare Lady	Four American adult film stars are given the chance to do some 'real' acting. After an extensive LA casting call, four porn stars are selected by a British casting director to attend a professional acting school in the Garrick Theatre in London. Many adult film stars feel that they can act as well as any other actor, if they were given a chance. But	2

	will these wanna-be thespians be able to cut..	
One Tree Hill	Tree Hill follows the lives and loves of these two brothers, their friends and their family as they navigate high school, marriage, and finally... adulthood. Set in the small town of Tree Hill, NC, this teen-driven drama tells the story of two half brothers, who share a last name and nothing else. Brooding blue-collar Lucas is a talented street-side basketball player, but his skills are appreciated only by his friends at the river court. Popular, affluent Nathan basks in the hero-worship of the town, as the star of his high school team. And both boys are the son of former college ball player, Dan Scott, whose long ago choice to abandon Lucas and his mother Karen, will haunt him long into his life with wife Deb, and their son Nathan.	2
The Pretender	The Pretender is the story of Jarod, a boy-genius taken from his family as a child. Jarod possesses the ability to quickly learn and impersonate different jobs and occupations. His abductors, a facility simply known as The Centre, tested his abilities through various simulations.	2
Raines	In this drama from NBC Universal Television, LAPD Detective Michael Raines has the ability to have detailed conversations with deceased crime victims but by only using his imagination. This unique "talent" allows him to retrace the steps leading up to their murders and helps him to solve the cases. Although he also must also deal with the apparition of his dead partner, Raines won't stop until each killer is found and brought to justice.	2
The Real Housewives of Atlanta	An up-close and personal look at life in Hotlanta, The Real Housewives of Atlanta follows five glamorous Southern belles -- DeShawn, Kim, Lisa, NeNe, and Sheree -- as they balance motherhood, demanding careers and a fast-paced social calendar, and shows what life is like in the most exclusive areas of Atlanta. These driven and ambitious women prove that they're not just "housewives," but entrepreneurs, doting mothers and classy Southern women.	2
Remington Steele	Remington Steele is an American television series, produced by MTM Enterprises and first broadcast on the NBC network from 1982 to 1987. It starred Stephanie Zimbalist as private detective Laura Holt and Pierce Brosnan as a roguish former white-collar thief and con man who assumed the fictitious Remington Steele identity. The show took an offbeat approach to the standard TV detective genre, with ironic plotting and elements of romantic comedy.	2
Roswell	Human/Alien hybrids, must hide their alien sides to fit into their New Mexico-high school, while attempting to learn about their past, their gifts, and love as outsiders. Their destinies clash with their feelings as they discover the extraordinary circumstances that led them to Earth, and may eventually lead them home.	2
Simon & Simon	Simon & Simon is a show based on two brothers who just happen to be private investigators. They live and work in San Diego where once a week, for eight seasons, the series revealed the loyalty and love they had for one another. "They're more than brothers, they're best of friends."	2
Solitary	This new reality competition by FOX pits nine people against each other in the ultimate battle of endurance. Nine contestants are isolated from the rest of the world - - and also from each other. The players then become subjects in a series of strange and taxing experiments. They must endure challenges involving hunger, pain, sleep deprivation, mind control, and more! All for the coveted \$50,000 prize. Though there are nine players in this game, the real battle lies between each contestant and his or her own self.	2
St. Elsewhere	St. Eligius Hospital in South Boston was not exactly the world's best health care center. Despite its flaws, it featured some of the most caring doctors and nurses you could ever meet. Led by Dr. Donald Westphall (and later by Dr. Benjamin Gideon), St. Eligius became a sanctuary for the underdog and the downtrodden.	2
Starsky and	On the surface, plain-clothes Detectives Starsky and Hutch are like oil and water. Ken	2

Hutch	Hutchinson opts very much for the quiet life, being well read, a deep thinker, and enjoying fine cuisine. Dave Starsky, on the other hand, is louder, more brash, enjoying street life and a diet of junk food. Their personalities might contrast, but once together, they mesh perfectly, practically operating and thinking as one, as they rid the streets of muggers, drug pushers, murderers, rapists, racketeers, and similar scum.	
The Starter Wife	The Starter Wife, based on the best-selling novel by Gigi Levangie Grazer, chronicles the events of one woman's life following her divorce after years of marriage to a Hollywood studio executive.	2
Sunset Tan	Despite being remarkably sunny in Los Angeles, not everyone can easily get tan. That's where Sunset Tan comes in. They are one of the most go-to tanning salons out there and celebrities agree. Along with this new show, comes a new employee, Erin. Erin grew up in a small town and isn't exactly sure if the city is where she should be, because the employees even aren't all that smart...	2
Temptation Island	Temptation Island is a reality series in which four unmarried couples travelled to an exotic location to test the strength of their relationship. When couples arrive to the exotic location, 26 singles have been presented to them. When the whole story finishes they all get back together at bonfire where they decide about the future of their relationships.	2
The Time Tunnel	The Time Tunnel chronicles the adventures of two scientists, Dr. Tony Newman and Dr. Douglas Phillips. Both are working on Project TicToc, a government operation to perfect time travel. The two American scientists are lost in the swirling maze of past and future ages, during the first experiments on America's greatest and most secret project, the Time Tunnel.	2
Vanished	This FOX drama centers on the search for Sara Collins. She's the wife of Senator Jeffrey Collins. Sara vanishes and the FBI lead by Agent Graham Kelton is on the job, but before they can find her they need to find out who she really is. The search for Sara will expose many secrets. Nothing is as it seems. Everyone is a suspect because of their secrets.	2
Bones	Inspired by the real-life forensic anthropologist and best-selling novelist Kathy Reichs, Bones is a darkly amusing investigative drama centered on Dr. Temperance Brennan, a forensic anthropologist who writes novels on the side. She and FBI Special Agent Seelely Booth take on murder cases that defy the standard methods of identifying a body, requiring Brennan to use her uncanny ability to read clues in victims' bones.	2
Chicago Hope	"Chicago Hope" focuses on the heroic and eclectic staff of doctors practicing cutting-edge medicine at Chicago Hope Hospital. In the changing world of modern health care, the staff members continue to upgrade their medical skills while trying to maintain a modicum of sanity in the pressure cooker of high-tech medicine. Their task is complicated by the fact that "Chicago Hope" has developed a reputation for being "the last, best hope," a place where patients come for treatment that no other institution can, or dares, to provide.	2
ER	Doctors labor to save lives in the emergency room of a Chicago hospital.	2
The Fall Guy	Colt Seavers is a Hollywood stuntman by trade... but work in Hollywood is sometimes hard to come by. Fortunately, Colt's other job is as a bounty hunter – and there's never any shortage of bail-jumping bad guys to hunt down. Colt is helped by his young and enthusiastic cousin Howie – who knows a little bit about everything and not enough about anything – and Jody, a stunningly beautiful stuntwoman. The trio use the tricks of the stunt trade to catch the criminals.	2
Friday Night Lights	A small Texas town has high expectations for its top-ranked football team. Expanding on the hit feature film "Friday Night Lights," this poignant series centers on the small rural town of Dillon, Texas, where the coveted state football championship rings are	2

	held in the highest regard.	
House	Dr. Gregory House (Hugh Laurie) is devoid of anything resembling bedside manner and wouldn't even talk to his patients if he could get away with it. Dealing with his own constant physical pain, he uses a cane that seems to punctuate his acerbic, brutally honest demeanor. While his behavior can border on antisocial, House is a brilliant diagnostician whose unconventional thinking and flawless instincts afford him widespread respect. An infectious disease specialist, House thrives on the challenge of solving medical puzzles in order to save lives. He has assembled an elite team of young experts to help him unravel these diagnostic mysteries: neurologist Dr. Eric Foreman (Omar Epps); immunologist Dr. Allison Cameron (Jennifer Morrison); and intensevist Dr. Robert Chase (Jesse Spencer). House has a good friend and confidant in oncology specialist Dr. James Wilson (Robert Sean Leonard), with whom he consults with on a regular basis.	2
The A Team	In 1972 a crack commando unit was sent to prison by a military court for a crime they didn't commit. These men promptly escaped from a maximum security stockade to the Los Angeles underground. Today, still wanted by the government, they survive as soldiers of fortune. If you have a problem, if no one else can help, and if you can find them, maybe you can hire: THE A-TEAM.	3
The Academy	This new reality series follows a group of Los Angeles police recruits through the grueling training regimen they all must endure before earning their badges as full-fledged members of the police force.	3
John Doe	The series is about the life of John Doe, a mysterious man who rises from the primordial waters of an isolated island, possessing knowledge of literally everything in the world, yet having no memory of who -- or even what -- he is. Doe quickly finds his way to Seattle, where he befriends the police and uses his special gift to help them solve "impossible" crimes each week, while continuing his unending quest to uncover who he is and where he came from. In his search to unlock the key to his past, He may be a government agent, an extra-terrestrial or perhaps just a regular John Doe with a bout of amnesia. Whatever secrets his past holds, Doe is now the man who knows everything -- a gift that will forever change his destiny.	3
K-Ville	It's been two years since Hurricane Katrina ravaged New Orleans and a select few still remain at the NOPD. These special cops are bound and determined to bring back the life to New Orleans, otherwise known to most as K-Ville (Katrinaville), and clean up the crime and damage that still remains	3
Knight Rider	The adventures of Michael Knight and his incredible super-car K.I.T.T., Knight Industries 2000. Selected by a dying billionaire, Wilton Knight, Michael works for the Foundation for Law and Government with the job of rooting out evil that is above the law. Mike teams up with KITT—an artificially intelligent Ford Shelby GT500KR—to fight crime in this continuation of the 1980s cult favorite.	3
Kojak	An independent-minded police detective solves crimes on the streets of New York City. Lt. Theo Kojak is a bald, lollipop-sucking detective also known for his trademark catch-phrase, "Who Loves Ya, Baby?" His boss is Capt. Frank MacNeil, with whom Kojak has a lot in common, who was later promoted to Chief of Detectives. His most trusted assistants are Det. Bobby Crocker and Det. Stavros.	3
Kojak 2004	New York's most famous police lieutenant from the 70's is back! The candy eating, jazz and fashion loving bald guy hunts criminals again. This time Ving Rhames plays the role of Theo Kojak. Kojak doesn't do the police work after the book; he follows his heart while he searches for the bad guys. His methods are successful, but he needs protection by his old friend and boss Captain Frank McNeil.	3
L.A. Dragnet	This updated version of Dragnet features a group of detectives in the LAPD Robbery/Homicide Squad investigating crimes that could only take place in Los Angeles, one of the world's most glamorous and intriguing cities. Dragnet will draw	3

	storylines from L.A.'s rich crime history, as well as today's headlines. Against the backdrop of economically and culturally diverse neighborhoods, the detectives come up against a group of criminals who are just as diverse, from diamond thieves and Hollywood movie moguls to street gangs, copycat serial killers, international terrorists and kidnappers.	
Life	Damian Lewis stars as a former police officer who, after years of false imprisonment, returns to the force with a decidedly different philosophy. Deadwood's Robin Weigert has been added to the cast of the series. She'll play the boss of Lewis' character, Lt. Davis. Brooke Langton will play the lawyer who got him out of prison that despite the fact that she is married, has a spark with Lew	3
Lou -Grant	As the series began, Lou Grant had just been fired from his job at WJM-TV, and had moved to Los Angeles to work for a newspaper. L.A., a city full of interesting stories, perfectly made for exciting newspaper reports....	3
Mad Mad House	Mad Mad House is a reality show from the SCIFI Channel, about 10 ordinary people who become roommates with a wiccan, a naturist, a vampire, a modern primitive, and voodoo priestess.	3
Mad Men	It's New York in the 1960s, and the men and women who work at the Sterling Cooper Advertising Agency are some of the top names in the industry. Master manipulator and leading ad man Don Draper is at the top of his game, but there are those who want to see him topple down. Can he maintain his formidable status? Writer and executive producer Matthew Weiner of The Sopranos fame is the man...	3
MadTV	A similar show to Saturday Night Live and In Living Color, sketch comedy series MADtv mines the world of popular culture for subjects ripe for parody. Based on the comic stylings of MAD magazine, the series satirizes celebrities, music videos, television shows, and more through outrageous sketches, a unique assembly of recurring characters, and the uninhibited zaniness of cast members.	3
New Amsterdam	New York City homicide detective John Amsterdam is cursed with immortality because he stopped the murder of a Native American girl in 1642 by stepping in front of a sword. Due to this act of kindness, the girl rescued Amsterdam from the stab wound by making him immortal, but warns that it is a curse that will only be lifted when John meets his true love. Now, Amsterdam is a homicide detective in the Big Apple where he shares his secret with Omar, a blues club owner with a few secrets of his own.	3
The Practice	Set in Boston, The Practice centers on a firm of passionate attorneys to whom every case is important and every client worth a fight to the end. Legal maneuvering is the firm's modus operandi, and they have it down to a science, making even the most questionable arguments convincing. And while they can't — and don't — win every trial, the pursuit of justice remains the priority until the final verdict is announced ... and sometimes afterwards.	3
She Spies	The women of She Spies are three career criminals with one shot at freedom. Working for the very feds who put them away, the career con-girls have turned their backs on their former lives, waging weekly war on the lowliest of the world's sleaze and scumbags, armed with sleek moves, street smarts and enough attitude to make a sailor blush.	3
T.J. Hooker	After his partner was murdered, veteran plain clothes Detective T.J. Hooker (William Shatner) had reverted back to his former role as Sergeant, and returned to the beat to rid the streets of the type of scum that was responsible for his partner's death. Back in uniform, Hooker was assigned to train the academy recruits, and was partnered with brash, sometimes hot-headed young rookie Vince Romano (Adrian Zmed). With Romano much his junior, Hooker acted as his trainer and mentor on both a professional and social level.	3
Tim Gunn's	Move over Heidi Klum, everyone's favorite personality on Project Runway gets a	3

Guide to Style	chance to be at the helm of his own show. Using his book <i>Tim Gunn: A Guide to Quality, Taste & Style</i> as a point of reference, Gunn will go to work on style-challenged subjects to inform the masses on his philosophy of dressing, grooming, and poise.	
The Tonight Show	Tonight began in June 1953 as a local show on WNBT-TV, the NBC flagship station in New York. Steve Allen opens each evening seated at the piano, chatting and playing some of his own compositions. He then goes to his desk, where he talked about anything that seemed to interest him. There are guest stars, in addition to his semi-regulars, but the emphasis is on Steve and his comedic ad-libbing.	3
Valentine	Greek deities Aphrodite and her son Eros have settled here on Earth and are in the matchmaking business in this romantic dramedy from The CW.	3
Caught on Tape	MSNBC looks at people on the edge -- con artists, tattoo freaks, exorcists and more. How far will people go if they think no one is watching? What obsessions lurk beneath the surface? You won't believe it until you see it -- CAUGHT ON TAPE!	3
Cover Me	Based on the real life adventures of an undercover FBI family. In order to protect his family, Danny Arno chooses to include his family in his work for the FBI, rather than hide it from them.	3
Deadline	New York city journalist Wallace Benton has one aim in life: get the story and get it right. No matter what the cost. This mentality wreaks havoc on his personal life, but makes for great reporting. A crumbling marriage, alcoholic tendencies and involving his journalism students in devious plans to gain info about a story are just a few of the ways that making a deadline leads Wallace Benton to cross the line.	3
The Dresden Files	A Chicago-based wizard works as a private investigator.	3
Easy Money	"Easy Money" is a dramedy set in the world of a Southwestern loan shark family. Led by business-savvy matriarch Bobette Buffkin (Laurie Metcalf "Roseanne"), Prestige Payday Loans is a thriving quick-cash company. But trouble quickly comes from thuggish new competitors, the Mamayo Brothers, and it's up to middle son Morgan (Jeff Hephner "The O.C.") to quash any tension.	3
ECW	Extreme Championship Wrestling with Joey Styles and Tazz.	3
Eureka	Eureka takes place in a high tech community of the same name, located somewhere in the Pacific Northwest (implied in various episodes to be Oregon) and inhabited entirely by brilliant scientists working on new scientific advancements for the United States government that frequently go disastrously awry. The town's existence and location is a closely guarded secret. U.S. Marshal Jack Carter stumbles upon Eureka while transporting a fugitive prisoner — his own rebellious teenage daughter Zoe — back to her mother's home in Los Angeles, California. When a faulty experiment cripples the sheriff of Eureka, Carter finds himself quickly chosen to fill the vacancy. Despite not being at the genius level of most of the town, Jack Carter's ability to connect what others do not see repeatedly saves Eureka, and indeed the entire world, from one would-be disaster after another.	3
Hell's Kitchen	A former-pro-soccer-player-turned-Michelin-starred-chef, Gordon Ramsay is looking for someone with the potential to become America's next culinary star. The heat is on and the "steaks" are high as the contestants endure Ramsay's hellishly intense culinary boot camp. Each week Ramsay will grill the ambitious hopefuls as they attempt to prove they have what it takes to run their own restaurant.	3
Heroes	An epic drama that chronicles the lives of ordinary people: a genetics professor, a hospice nurse, a single mom, a street cop, a small town cheerleader, a tormented artist, a computer geek-coming to grips with newly found remarkable powers.	3
Hill Street Blues	Before "NYPD Blue" and "The Shield" came "Hill Street Blues," the series that revolutionized the TV cop show by giving television viewers a realistic glimpse into	3

	the daily lives of the officers and detectives at an urban police station. Earning 98 Emmy nominations over its seven-year run, "Hill Street Blues" was one of the most innovative and critically acclaimed shows of the 1980s.	
The Incredible Hulk	A research scientist, who changes into a green man monster when angered, searches for an antidote.	3
The Invisible Man	As a scientist working for a government think-tank called the KLAE Corporation, Dr. Daniel Westin creates a formula to be used for matter transformation. To test the formula he uses it on himself. Before he can return to normal he discovers the government wants to use his formula for wrong, so he destroys it.	3
Lost in Space	In 1997, Earth has squandered its natural resources. The Robinson family departs Earth on the Jupiter 2 in search of a habitable planet for mankind to colonize. However, a spy from a foreign country, Dr. Smith, becomes trapped aboard while trying to sabotage the ship. Dr. Smith's extra weight causes the Jupiter 2 to be thrown off course.	4
Maury	The host, Maury, helps people with their problems and other issues they need to work on. He helps families sort out their differences and help friends come closer together. He also helps young parents or soon to be young parents tell their own parents about their situation. He also helps people confront their crushes and brings them together.	4
Murder One	Theodore Hoffman is a prominent defense attorney in a prestigious Los Angeles law firm. After successfully defending the wealthy but suspicious Richard Cross in a lurid murder trial, he is now involved in the defense of Neil Avedon. Neil is a famous young actor who has had severe drug and alcohol problems and was subsequently charged with the murder, after Cross was exonerated.	4
The Rockford Files	James Garner stars as Jim Rockford, a private investigator who lives and works from his trailer in Malibu, Los Angeles. Jim is an ex-con who had been imprisoned for five years in San Quentin for armed robbery – a crime which he did not commit and was later pardoned.	4
S.W.A.T.	S.W.A.T. is a program inspired by the real-life crime-control units that rose to prominence in the U.S. after the civil disturbances of the late 1960's. It was a spin-off of the popular ABC cop drama The Rookies. This particular 'Special Weapons And Tactics' unit was an elite five-man team of police officers who dealt with situations that were too dangerous for the police force to handle.	4
Sanctuary	Dr. Helen Magnus is one of the first female doctors in the Royal College during Victorian England. Dr. Magnus takes over her fathers' sanctuary for supernatural creatures, collected from all over the world. In her work with these creatures, Dr. Magnus has received age longevity. She is joined by her daughter Ashley, played by Emilie Ullerup, and young psychiatric resident Dr. Will Zimmerman, played by Robin Dunne, who may have what it takes to become her new protégé.	4
Sliders	"What if you could find brand new worlds right here on Earth, where anything is possible: same planet, different dimension? I found the gateway!" In his basement in San Francisco, boy-genius Quinn Mallory unlocks the doorway to an infinite number of Earths. He "slides" from world to world, not only adapting to his changing surroundings, but also trying to get home.	4
Standoff	Matt Flannery and Emily Lehman are top-ranked crisis negotiators in the FBI's Crisis Negotiation Unit who are trained to talk their way through volatile situations. They make an outstanding team professionally, but their relationship is a bit more precarious off the job. The series advances the fundamental idea that in life and in love "Everything is a negotiation."	4
Team Knight Rider	Ten years ago...all it took was one man, and one car, to get the job done. Now...the Foundation for Law and Government, has assembled five highly skilled operatives, and paired them with the most advanced state of the art vehicles, to take on a new	4

	breed of outlaw. They are...Team Knight Rider.	
Tequila & Bonetti	Modeled after the movie Turner and Hooch, the series followed the adventures of a New York cop in a California beach town. His partner was a dog whose thoughts were voiced for the audience to hear.	4
Total Recall 2070	Detective David Hume and his android partner Ian Farve investigate crimes in the year 2070. The series is based on works by author Philip K. Dick that were adapted into the film Total Recall starring Arnold Schwarzenegger and Sharon Stone.	4
Are You Smarter Than a 5 th Grader	Jeff Foxworthy hosts this game show in which contestants try to answer questions from elementary school in order to win one million dollars. Across a variety of subjects, contestants choose 1st grade through 5th grade level questions as they progress from \$1,000 to \$1,000,000. Helping them out with the answers is a group of actual fifth graders who team up with the contestants when necessary.	4
AST Dew Tour	ST Dew Tour is a ballerina sports tour that consists of five major, multi-sport events spanning across the country, with a cumulative points system, a \$2.5 million competitive purse – the largest in action sports.	4
Burn Notice	After fleeing a Nigerian operation blown apart by the sudden and unexplained non-cooperation of his U.S. contact, Westen finds himself in his hometown[3] of Miami, Florida, USA, attended to by his ex-girlfriend but abandoned by all his normal intelligence contacts, under continuous surveillance with his personal assets frozen. Extraordinary efforts to reach his U.S. government handler eventually yield only a grudging admission that someone powerful wants him "on ice" in Miami; if he leaves the city he will "heat up fast", i.e., he will be hunted down and taken into custody, whereas by staying there he can remain relatively free. Consumed by the desire to find out why he's been burned, and by whom, Westen goes to work as an unlicensed private investigator and freelance spy for anyone in town who can pay him any money in order to fund his personal investigation into his own situation as a blacklisted agent.	4
The Crow: Stairway to Heaven	Eric Draven, a musician, and his fiancée, a photographer, are murdered. One year after their death, Eric returns from the dead, but has been changed. Eric remembers little by little what happened to him and finds those which destroyed his life. He then kills them off one by one until he finds the head of the organization the murderers work for.	4
Decision House	"Decision House" is an intense real-life look at couples struggling to hold on to their relationships, as they try one last time to find happily ever after. In "Decision House" Judge Lynn Toler ("Divorce Court") and a panel of experts, including well-known family and marriage therapist Dr. Tara Fields ("Intervention"), help couples on the brink of disaster tackle issues ranging from financial hardships to infidelity.	4
Equal Justice	A contemporary drama focusing on the personal and professional lives of the men and women in a big city's District Attorney's office. Moving, dramatic, irreverent and funny, the drama offers an incisive look at the workings of the American criminal justice system as seen through the eyes of those who are its daily defenders in court, as well as from the perspective of those accused of committing crimes.	4
Galactica 1980	The fight continues against the Cylons, in this, the sequel to the original Battlestar Galactica.	4
Ghost Hunters	Ghost hunters investigate haunted houses throughout the country.	4
Ghost Hunters International	Paranormal investigators examine haunted locations around the world.	4
Hart to Hart	Robert Wagner and Stephanie Powers are Jonathan and Jennifer Hart, a pair of wealthy amateur sleuths. He and his wife Jennifer are able to live the high life, but,	4

	their inquisitiveness keep them constantly caught between glamour and danger.	
I Spy	I Spy is an American television secret agent action adventure series about a pair of American agents facing espionage adventures with skill, humor and ingenuity, which aired on NBC from 1965 to 1968.	4
It Takes a Thief	Alexander Mundy was a cat burglar and professional thief who had style, class and talent. He made only one mistake -- getting caught. While serving a sentence in San Jobel Prison, he was contacted by representatives of the US Government spy agency, SIA. They offered to get him out if he would put his talents to work stealing for the government. Accepting the offer, he worked closely with an SIA.	4
Alfred Hitchcock Hour	The Alfred Hitchcock Hour was a mystery and suspense anthology hosted by the master of suspense Alfred Hitchcock. Each 60 minute episode included opening and closing vignettes featuring Hitchcock who would often explain some aspect of the day's show and would often offer subtle (or not so subtle) jabs at the shows sponsors.	5
Alias Smith and Jones	Hannibal Heyes and Kid Curry, two successful and popular outlaw cousins in the old West, decide it's time to go straight. The problem is that the governor just can't give them amnesty right away, they have to prove that they deserve it. And in the meantime they will still be wanted. Hunting them is everybody, from sheriffs to bounty hunters, to posses and ordinary people.	5
Land of the Giants	This two-season series details the adventures of the three crew and four passengers of the sub-orbital spacecraft Spindrift. They are drawn through a space warp that crashes them onto a planet where everything is 12 times normal size. The castaways struggle to repair their damaged craft and somehow get back to Earth while being hunted by the totalitarian government that rule the planet	5
Night Gallery	Night Gallery was creator-host Rod Serling's follow-up to The Twilight Zone. Set in a shadowy museum of the outre, Serling weekly unveiled disturbing portraiture as preface to a highly diverse anthology of tales in the fantasy-horror vein. Bolstering Serling's thoughtful original dramas were adaptations of classic genre material--short stories by such luminaries as H. P. Lovecraft, Fritz Leiber, A.E. van Vogt, Algernon Blackwood, Conrad Aiken, Richard Matheson, August Derleth, and Christianna Brand. Variety of material brought with it a variety of tone, from the deadly serious to the tongue-in-cheek, stretching the television anthology concept to its very limit	5
Peacemakers	The Western Frontier is disappearing as encroaching civilization and the industrial age meet in 1882. Nowhere is the clash of the old and new more evident than in law enforcement. With the advent of such innovations as fingerprinting and photography, modern police investigation is born. Peacemakers revolves around the often contentious relationship between a grizzled, middle-aged Federal Marshall played by Tom Berenger ("Platoon," "Major League") and his cocky young deputy played by Peter O'Meara ("Band of Brothers"), who is a former Pinkerton agent from Chicago with a degree from Yale and a wagonload of forensic equipment.	5
Picket Fences	Sherrif James Brock (Tom Skerrit) is trying to maintain the small town of Rome, Wisconsin. Trying his best to keep the town in order, Judge Henry Bone (Ray Walston) rules the court room and while he doesn't always stick to the law, he does what is best for the town. Making Judge Bone's job harder is lawyer Douglas Wambaugh (Fyvush Finkel), a friend of Judge Bone but an enemy in the court room.	5
Red Eye	The show is officially titled "Red Eye with Greg Gutfeld" and is set up as a discussion group akin to "The McLaughlin Group." The similarity ends there. On this late night show, the outrageous and outspoken gather with Greg Gutfeld to discuss the news and the hottest topics of the day. Among the regular panelists are recurring guests Bill Shultz, Kevin Godlington, Will Durst, and Rachel Marsden. Greg Gutfeld's mother 82 year-old serves as "Senior Correspondent" and phones in her reviews from California with the senior citizen perspective.	5
The Search	The next Elvira lives among us, and the original Mistress of the Dark searches for the	5

for the Next Elvira	new Elvira with a series of tasks and challenges to see which of the thirteen hopefuls is worthy of becoming the new apprentice to the Mistress.	
Tremors	This spinoff of the Tremor movies chronicles the town of Perfection, Nevada, which has a little problem with great big worms. The Graboids, and their offspring the Shriekers and Ass-Blasters, have overrun the valley but are on the government's protected species list. The locals are (barely) allowed to live there rather than leave their homes, as long as they don't harm the creatures, particularly the giant Graboid known as "El Blanco"...	5
America's Toughest Jobs	"America's Toughest Jobs" is a new extreme competition series that will test 13 men and women who venture out of their safe and comfortable careers and are injected into some of the most challenging, dangerous and demanding jobs on earth. From logging high in the Oregon forest to oil drilling on the Texas range, and driving icy roads to extreme fishing – each job requires guts and stamina, and the competitors will have to live up to the same standards as the pros. At the end of each episode, their new boss and co-workers will determine success or failure, and those who don't make the grade will be sent home. Upping the ante, the annual salary of each job will be thrown into the pot until the finale – where one rookie will take home the well-earned cash.	5
American Gothic	The story takes place in the fictional town of Trinity, South Carolina, and revolves around Caleb Temple (Lucas Black) and the town's corrupt Sheriff, Lucas Buck (Gary Cole). Though appearing affable and charismatic, Sheriff Lucas Buck is a murderous rapist whose powerbase is backed by apparent supernatural powers, which he generally uses to manipulate people to "fulfill their potential" and make life-changing choices (usually for evil). Caleb Temple is a normal child whose paternity masks a horrific secret: Lucas Buck is his biological father, having raped his mother in front of Caleb's older sister Merlyn (Sarah Paulson). The horror of watching her mother be sexually assaulted caused Merlyn to become severely emotionally traumatized and withdrawn from the rest of the world, made even worse when her mother committed suicide after giving birth to Caleb.	5
Another World	Set in the fictional Bay City, Another World focused less on the conventional drama of domestic life as seen in other soap operas, and more on exotic melodrama seen between families of different classes and philosophies, the philosophy emphasized by the line read at the beginning of each show, "We do not live in this world alone, but in a thousand other worlds." A multiple Daytime Emmy Award winning serial, Another World has the distinction of being the first daytime soap to expand to an hour, of showcasing the most elegant sets and costuming daytime has ever known, and heavily recruiting actors and directors from the New York stage to make Another World considered to have had one of the most talented casts in daytime television.	5
Babylon 5	Politics, diplomacy and conflict converge at the Babylon 5 space station from which the popular science fiction television series centers.	5
Battle Dome	Julie Brown hosts an exciting new action sports competition pitting two teams of amateur athletes against a team of ten super athletes - the biggest and fiercest men and women who will stop at nothing to destroy every challenger who comes before them.	5
Battlestar Galactica	Battlestar Galactica continues from the 2003 mini-series to chronicle the journey of the last surviving humans from the Twelve Colonies of Man after their nuclear annihilation by the Cylons. The survivors are led by President Laura Roslin and Commander (later Admiral) William Adama in a ragtag fleet of ships with the Battlestar Galactica, a powerful but out-dated warship at its head. Pursued by Cylons intent on wiping out the remnants of the human race, the survivors travel across the galaxy looking for the fabled and long-lost thirteenth colony: Earth.	5
Battlestar	From an ancient civilization of humans, a fleet of starships --led by battlestar	5

Galactica Classic	Galactica--search a lost and last remaining colony called, Earth, after the Cylons, their mortal enemies, destroy all other habitable colonies.	
Buck Rogers	A 20th century astronaut emerges out of 500 years of suspended animation into a future time where Earth is threatened by alien invaders.	5
Emergency	The series followed the early years of the Paramedic program in the Los Angeles County Fire Department (LACoFD) with the focus on the personnel of Fire Station 51, in particular Firefighter/Paramedics John Gage (Randolph Mantooth) and Roy DeSoto (Kevin Tighe).	5
Fantasy Island	Imagine a place where any dream, any fantasy, can come true. Such a place exists: welcome to "Fantasy Island." Your host is Mr. Rourke, a charming gentleman who, along with his diminutive assistant, Tattoo, will see to it that your island visit is all that you could ever have imagined...literally.	5
Flipper	The weekly series takes place in and around the Bal Harbor Institute, a marine mammal research facility set in the beautiful Florida Keys, where ground-breaking studies are being conducted on dolphin behavior. The institute and the new Monroe County Search & Rescue Sheriff's Substation, set the stage for highly dramatic air and sea rescues involving Flipper, one of the most loved and enduring TV characters of all time, and his human companions.	5
In Harm's Way	Hosted by Hunter Ellis (Hunter Ellis), former Navy Fighter Pilot and one of People Magazine's 50 most beautiful people in the world, each episode documents the stories of the brave individuals who risk their lives in a multitude of life-threatening jobs, all for the benefit of society.	5
Ironside	When an assassin's bullet confines him to a wheelchair for life ending his career as Chief of Detectives, Robert T. Ironside becomes a consultant to the police department. Detective Sergeant Ed Brown and policewoman Eve Whitfield join with him to crack varied and fascinating cases.	5
Lock-Up	Every week in the late 1950's Lock Up revealed for American television viewers an account of the unjustly accused. The shows broader theme is that when individuals are charged with a crime not all is as it first appears and a thorough investigation is duly warranted in order to ferret out the vital facts pertinent to the case.	6
Meet the Presidents	Meet the Presidents is the longest-running network television show in history. Since 1947, the program has been asking the hard questions in unrehearsed, news-making interviews with the movers and shakers of the world: top government officials, political leaders, heads of state, and presidents. These are the people who helped shape history, and here are their appearances on Meet the Press -- uncut, as they originally aired!	6
National Geographic Channel	A series of documentaries that covers a diverse number of subjects including the natural world of wild creatures, native cultures, historical discoveries, etc. They range from a Nazi Expedition to Monkey Hunters, all the way to the Penguin Death Zone, and exploring the Year of the Hamster.	6
NBC News on Stage	Stars on Stage- NBC news presents them all: Madonna, U2, Letterman, The Rolling Stones....NBC looks behind the scenes and presents astonishing facts about stars in stage.	6
NBC News Special	NBC News brings its worldwide resources to these in-depth special programs. Brian Williams takes the lead in covering topics that enlighten, uplift or demand further scrutiny. Important stories of our time; these are the stories of NBC News Specials.	6
NBC News Time Capsule	NBC News has been covering the events of the nation and the world for decades, amassing one of the finest and most extensive archives anywhere. Here's where you can find some of the real treasures in our collection, many of them now available for the first time. Vintage programs, interviews and news coverage, offering a unique and fascinating perspective on our times.	6
NOVA	Seen in more than 100 countries, NOVA is the most watched science television series	6

	in the world and the most watched documentary series on PBS. Each week NOVA takes an in depth look at a particular topic or individual in the science field. NOVA's topics cover all branches of science and engineering. NOVA's unique way of presenting each topic can be interesting to both those with no prior knowledge or those whose life's work is being covered.	
Outer Limits	Like the classic 1960s series of the same name, each episode is a celebration of the human imagination in which humanity's exploration of new frontiers in technology, outer space and the human experience reveal our greatest hopes and darkest fears. Stories on The Outer Limits have explored the consequences of such controversial and thought-provoking topics as genetic manipulation, alien visitation and life after death	6
Surface	Ever wonder what life would be like if a new form of sea life began to appear in locales all over the earth? "Surface" is an expansive drama and undersea adventure that centers on the appearance of mysterious sea creatures in the deep ocean...	6
Tom Brokaw Reports	His insightful coverage of world events, from Watergate to the fall of the Berlin Wall to the war in Iraq, made Tom Brokaw one of the most respected names in journalism. 21 years as anchor of NBC Nightly News honed his reporting style and earned America's trust. Where Tom Brokaw leads, an interesting story is sure to follow.	6
Voyage to the Bottom of the Sea	Voyage to the Bottom of the Sea, an action-filled and entertaining adventure series, is the brainchild of Writer/Producer/Director Irwin Allen... the "Master of Disaster." The submarine Seaview, the world's only privately owned nuclear sub, investigates the mysteries and dangers of the sea.	6
Wired Science	"Wired Science" brings the cutting-edge technology stories from Wired Magazine to life. This one-hour primetime program features stories on recent discoveries, the latest innovations, and breakout ideas.	6
Barrett-Jackson: Life Off the Block	A series of four one-hour specials in which cameras follow Craig Jackson, Steve Davis and various consigners and bidders behind-the-scenes, before, during, and after the 2005 Scottsdale Auction.	6
Carrier	In the middle of the ocean, a thousand miles from nowhere, a floating city rises above the sea. Twenty-four stories high, three football fields long, carrying 5,000 sailors and marines and 85 military aircraft - this is the USS Nimitz. From May to November 2005, a team of documentary filmmakers embedded aboard the USS Nimitz as it deployed to the Persian Gulf in support of Operation Iraqi Freedom. The result is a raw and honest look at the United States Navy and its role at a critical turning point in the controversial war. With startling intimacy, CARRIER follows a core group of subjects as they navigate personal conflicts around their jobs, family, faith, patriotism, and the rites of passage - all against the extraordinary backdrop of the war in Iraq.	6
Destination Truth	The series follows paranormal researcher Joshua Gates around the world to investigate claims of the supernatural, mainly in the field of cryptozoology.	6
Fox News Specials	Specials and Documentaries about our world today.	6

Appendix D

Day 1

SCREEN 1 – Both Conditions

Tomorrow when you return to this lab you will all be watching films and eating snacks. Note as you consider any film viewing selections that you will be monitored during the hour film viewing period to ensure that you are paying attention, and anyone caught sleeping, reading e-mail, doing work, or not paying attention for any other reason **will NOT receive their \$30 study completion payment** - they will only receive their \$10 show-up fee. Also, note that you will be required to throw away any uneaten snacks you are given during tomorrow's session - snacks may not be taken out of the lab.

[Click Here](#)

SCREEN 2 – Both Conditions

Research Study

Please enter your USER ID here (this number was given to you by the experimenter):

SCREEN 3 – Both Conditions

Research Study

There is research suggesting that people experience internal conflict when choosing between things they feel they *should* do but don't particularly want to do ("should" options) and things they *want* to do but don't feel they should do ("want" options). *Should* options are typically less instantly gratifying but provide more long-term value than *want* options. To give a concrete example, a greasy slice of pizza (which tastes great but is quite unhealthy) is more of a *want* option and less of a *should* option than a simple salad (which often tastes just so-so but is quite healthy).

Consider the following choice that a person could face:

Eating an apple



or

Eating a package of M&Ms



1. Which option do you think is more of a *should* choice?

- Eating an apple.
 Eating a package of M&Ms.

2. Which option do you think is more of a *want* choice?

- Eating an apple.
 Eating a package of M&Ms.

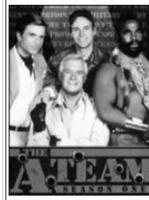
SCREEN 4 – Uncertainty Condition

Research Study

Tomorrow a coin flip will determine

Which of the following television shows you watch for 1 hour:

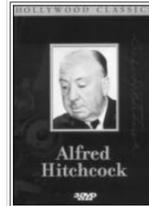
(1) The A Team (see description below).



"In 1972 a crack commando unit was sent to prison by a military court for a crime they didn't commit. These men promptly escaped from a maximum security stockade to the Los Angeles underground. Today, still wanted by the government, they survive as soldiers of fortune. If you have a problem, if no one else can help, and if you can find them, maybe you can hire: THE A-TEAM."

or

(2) Alfred Hitchcock Hour (see description below).



The Alfred Hitchcock Hour was a mystery and suspense anthology hosted by the master of suspense Alfred Hitchcock. Each 60 minute episode included opening and closing vignettes featuring Hitchcock who would often explain some aspect of the day's show and would often offer subtle (or not so subtle) jabs at the shows sponsors.

NOTE: We will monitor you tomorrow while you are watching the show to ensure that you are paying attention. If we find that you are not paying attention (because you fall asleep, are reading a book, etc.), you will only receive a show-up fee of \$10 and no additional \$30.

Submit Screen 3

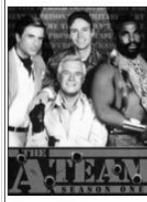
SCREEN 4 – Certainty Condition

Research Study

Tomorrow it has been determined that you will watch

The following television show for 1 hour:

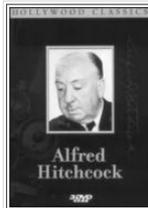
The A Team (see description below).



"In 1972 a crack commando unit was sent to prison by a military court for a crime they didn't commit. These men promptly escaped from a maximum security stockade to the Los Angeles underground. Today, still wanted by the government, they survive as soldiers of fortune. If you have a problem, if no one else can help, and if you can find them, maybe you can hire: THE A-TEAM."

The other show in our library, which you will not watch tomorrow is:

Alfred Hitchcock Hour (see description below).



The Alfred Hitchcock Hour was a mystery and suspense anthology hosted by the master of suspense Alfred Hitchcock. Each 60 minute episode included opening and closing vignettes featuring Hitchcock who would often explain some aspect of the day's show and would often offer subtle (or not so subtle) jabs at the shows sponsors.

NOTE: We will monitor you tomorrow while you are watching the show to ensure that you are paying attention. If we find that you are not paying attention (because you fall asleep, are reading a book, etc.), you will only receive a show-up fee of \$10 and no additional \$30.

Submit Screen 3

SCREEN 5 – Uncertainty Condition

Research Study

Now you must make the following choice, which we will hold you to tomorrow:

Note that this choice is NOT hypothetical - it is a real choice!

Tomorrow you will receive a snack to eat - either an apple or a package of M&Ms - during the hour you spend watching the show selected by a coin flip: either the show *The A Team* or the show *Alfred Hitchcock Hour*. Now you must choose which snack you want to receive if (A) a coin flip determines that you will watch *The A Team* and (B) a coin flip determines that you will watch *Alfred Hitchcock Hour*.

3. Which snack do you choose to be given tomorrow as a bonus if a coin flip determines that you will spend 1 hour watching an episode of the show *The A Team*?

An apple



A package of M&Ms



4. Which snack do you choose to be given tomorrow as a bonus if a coin flip instead determines that you will spend 1 hour watching an episode of the show *Alfred Hitchcock Hour*?

An apple



A package of M&Ms



NOTE: You will not be allowed to leave the CLER lab with your snack. You must either eat it during the hour of film viewing or return whatever remains of it when you leave the room.

Submit Screen 5

SCREEN 5 – Certainty Condition

Research Study

Now you must make the following choice, which we will hold you to tomorrow:

Note that this choice is NOT hypothetical - it is a real choice!

Tomorrow you will receive a snack to eat - either an apple or a package of M&Ms - during the hour you spend watching the show *The A Team*. Now you must choose which snack you want to receive while watching *The A Team*.

3. Which snack do you choose to be given tomorrow as a bonus while you spend 1 hour watching an episode of the show *The A Team*?

An apple



A package of M&Ms



NOTE: You will not be allowed to leave the CLER lab with your snack. You must either eat it during the hour of film viewing or return whatever remains of it when you leave the room.

Submit Screen 5

SCREEN 6 – Both Conditions

Research Study

Below are a number of words that describe different feelings and emotions. Please read each item and select the appropriate answer next to that word. Indicate the extent to which you feel this way right now.

Use the following scale to record your answers:

(1) = Very slightly or not at all

(2) = A little

(3) = Moderately

(4) = Quite a bit

(5) = Extremely

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
5. Interested	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
6. Distressed	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
7. Excited	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
8. Upset	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
9. Strong	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
10. Guilty	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
11. Scared	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
12. Hostile	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
13. Enthusiastic	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
14. Proud	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
15. Irritable	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
16. Alert	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
17. Ashamed	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
18. Inspired	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
19. Nervous	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
20. Determined	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
21. Attentive	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
22. Jittery	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
23. Active	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
24. Afraid	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5

Submit Screen 5

Day 2

SCREEN 1 – Both Conditions

During the remaining hour of today's session, you will all be watching films and eating snacks. Note that you will be monitored during this hour film viewing period to ensure that you are paying attention, and anyone caught sleeping, reading e-mail, doing work, or not paying attention for any other reason **will NOT receive their \$30 study completion payment** - they will only receive their \$10 show-up fee. Also, note that you will be required to throw away any uneaten snacks you are given at the end of today's session - snacks may not be taken out of the lab.

[Click Here](#)

SCREEN 2 – Both Conditions

Research Study

Please enter your USER ID here (this number was given to you by the experimenter):

SCREEN 3 – Both Conditions

Research Study

Please LEAVE THIS SCREEN UP on your computer until an experimenter tells you to close it!

Today I will watch

Alfred Hitchcock Hour

and snack on snack on

a package of M&Ms

CONCLUSION

The three papers presented in this dissertation advance our understanding of intrapersonal conflict and its implications. Paper 1 demonstrates the meaningful impact in the field of present bias on the choices people make when faced with a set of options for consumption ranging from extreme *wants* to extreme *shoulds*. Paper 1 also provides the first evidence suggesting that people may be able to reduce their tendency to exhibit present bias as they gain experience in a choice domain. Paper 2 presents field evidence suggesting that people respond to small windfalls as if they had received a meaningful shock to lifetime wealth, consistent with the predictions of mental accounting models and previous laboratory studies, but at odds with the predictions of standard economic theory. Paper 2 also provides the first evidence from the field that the items people purchase when they receive a small windfall differ meaningfully from those they purchase in the absence of such a windfall and offers a glimpse of what those types of goods are (luxury items). Finally, Paper 3 demonstrates that uncertainty about the future leads people to select *want* options over *should* options at an increased rate and that this effect is strongest when uncertainty pertains to similar possible outcomes.

There are a number of ways in which this dissertation contributes to the literature on psychology and economics and to society. The outcomes of conflicts we experience when choosing between *shoulds* and *wants* such as spending vs. saving, watching documentaries vs. action films, and eating healthy foods vs. unhealthy ones have important implications for society. Each of the studies in this dissertation attempts to deepen our knowledge of the circumstances that affect whether individual decision

makers favor *wants* or *shoulds*. The more we know about this question, the more effectively we will be able to model decision making and predict what policies have the potential to produce beneficial outcomes such as reducing obesity, increasing educational attainment and expanding retirement savings.

Another contribution of this dissertation is that it highlights the fact that field studies inspired by laboratory research can do considerably more than confirm that findings from controlled, laboratory studies have a meaningful impact on behavior in uncontrolled settings. There are a number of questions that are easier and more natural to investigate outside of the laboratory than in a laboratory setting because they require repeated observations of the same individuals over time. Papers 1 and 2 investigate two such questions: (1) whether people learn with experience to reduce the degree to which they exhibit present bias and (2) how the types of purchases people make after receiving a small windfall compare to the purchases they typically make.

Finally, this dissertation provides prescriptive advice to individuals and policy makers interested in finding ways to increase take-up of *should* options over *want* options. Evidence presented in Paper 1 indicating that people may learn over time to reduce the degree to which they exhibit present bias suggests a prescription for procrastination. Providing individuals with practice and feedback when they engage in decisions with the potential to result in procrastination about engaging in *should* behaviors may reduce the extent to which future procrastination ensues. In addition, Paper 3 suggests that by reducing uncertainty in a decision maker's environment, it may be possible to increase *should* behaviors.

The papers in this dissertation are representative of the research I have conducted in graduate school and hope to continue pursuing in the years to come. My work is interdisciplinary in nature as a result of my background in operations research, American studies, computer science, psychology and economics. The field data I obtained from internet companies reflect my interest in e-commerce, and the hypotheses I have tested and hope to test moving forward reflect my interest in topics at the intersection between economics and psychology. In addition, all of my research aims to broaden academic understanding of human decision making in areas that I believe have important implications for the welfare of individuals and society.